TOSHIBA

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SERVICE MANUAL

COLOUR TELEVISION

C80 Chassis

1480TB, 1480TBW
1480RB, 1480RBW

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CHAPTER 1 GENERAL ADJUSTMENTS

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is Ⓐ kV at zero beam current (minimum brightness) under a Ⓒ V AC power source. The high voltage must not, under any circumstances, exceed Ⓑ kV.

   Refer to table-1 for high voltage Ⓐ, Ⓑ & AC voltage Ⓒ (See SETTING & ADJUSTING DATA on page 13)

   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some part in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-ray radiation or other hazards.

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

SET-UP ADJUSTMENT

■ The following adjustments should be made when a complete realignment is required or a new picture tube is installed. Perform the adjustments in order as follows :

1. Color Purity
2. Convergence
3. White Balance

Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning. Refer to figure 1.

* There are no adjustment of purity and convergence in some picture tube (Unified with purity magnet)

COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Set the brightness and contrast to maximum.
3. Use a green raster from among the built-in test signals.
4. Loosen the clamp screw holding the yoke and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 2.) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, enter the raster vertically.
7. Slowly move the yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster.

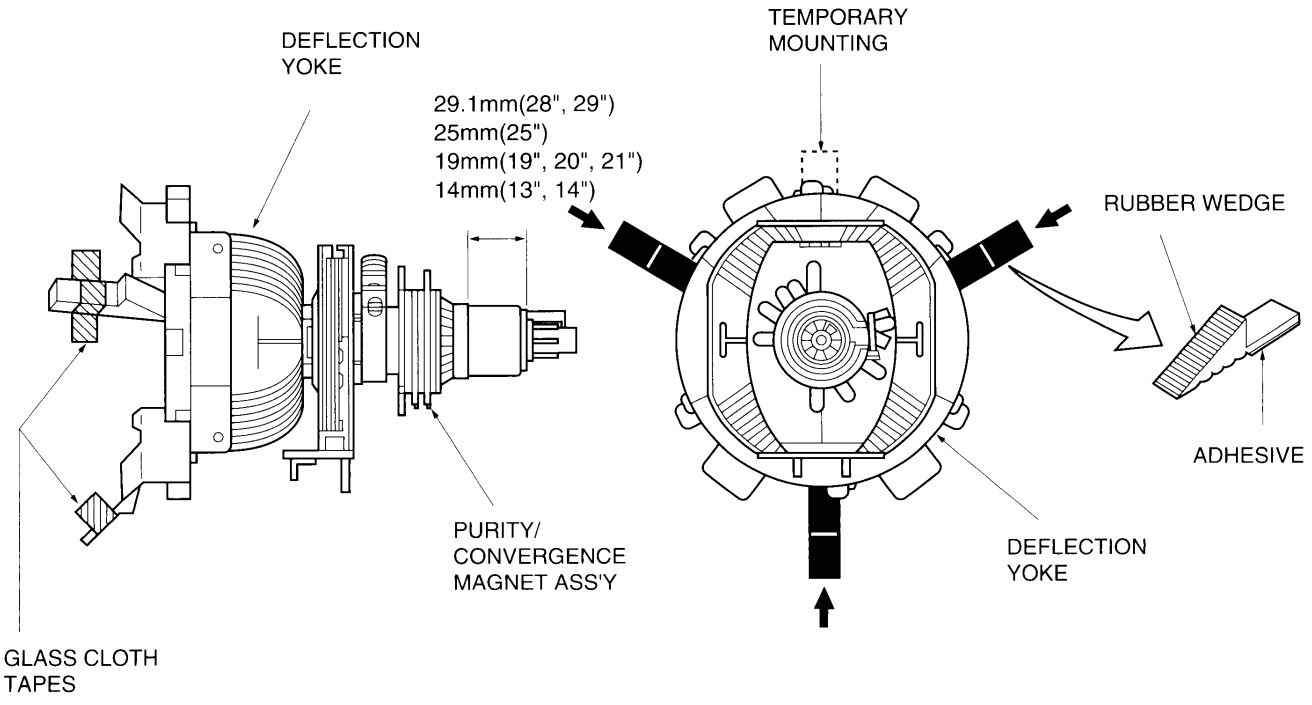


Figure 1.

CONVERGENCE ADJUSTMENTS

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ CENTER CONVERGENCE ADJUSTMENT

1. Use the cross-dot pattern from among the built-in test signals.
2. Set the brightness and contrast for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 2.) and superimpose red and blue vertical lines in the center area of the picture screen.
4. Turn the both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines at the center of the screen.
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual interaction and make dot movement complex.

■ CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of deflection yoke slightly to allow the yoke to tilt.
2. Temporarily put a wedge as shown in figure 1. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 3.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 3.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick three adhesive tapes on wedges as shown in figure 1.

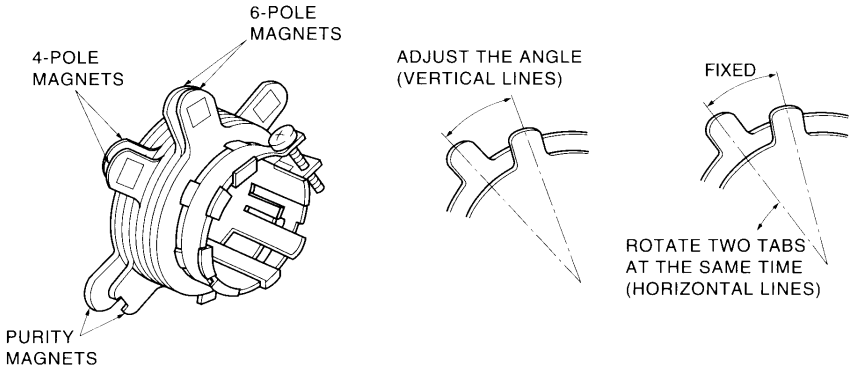
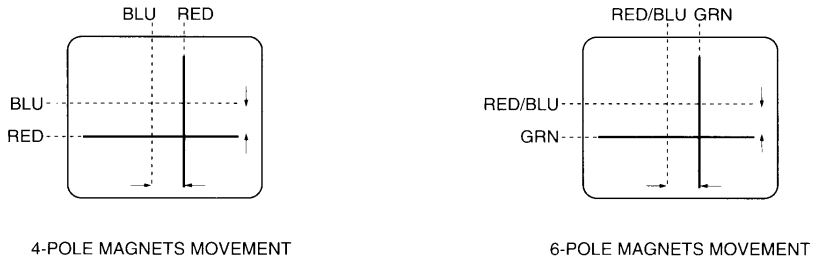


Figure 2.



Center Convergence by Convergence Magnets

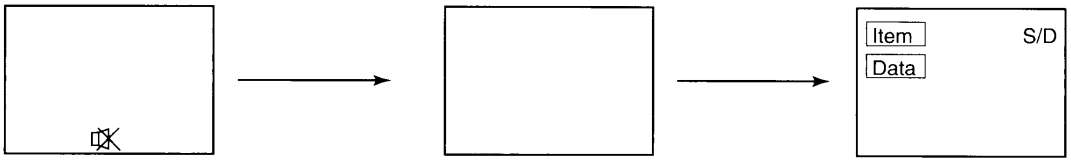
Circumference Convergence by DEF Yoke

Figure 3. Dot Movement Pattern

SERVICE AND DESIGN MODE

1. ENTERING TO SERVICE AND DESIGN MODE

1) Press 🔇 button once on Remote Control.
2) Press 🔇 button again to keep pressing.
3) While pressing the 🔇 button, press Vol Down ◿ – button on TV set.



(Service mode display)

2. KEY FUNCTION IN THE SERVICE MODE

The following key entry during display of adjustment menu provides special functions.

A single horizontal line ON/OFF:	- / - - button (on Remote)
Selection of the adjustment items :	CHANNEL ▲/▼ (on TV or Remote)
Change of the data value :	VOLUME ◿ +/– (on TV or Remote)
Initialization of the memory (QA02) :	CALL + CHANNEL button on TV (▲)
I²C BUS ON/OFF :	CALL+VOL ◿ + UP.
ASM start :	CALL+VOL ◿ – DOWN.
Automatic VCO adjustment :	0 button.
"RCUT" selection :	1 button
"GCUT" selection :	2 button
"BCUT" selection :	3 button
"CNTX" (or "SCNT") selection :	4 button
"COLC" selection :	5 button- - - - Color thickness correction
"TNTC" selection :	6 button note: Displayed differently as shown below, de-
"SECAM R–Y offset" selection	7 button pending on the setting of the receiving color
"SECAM B–Y offset" selection	8 button system.
	COLP (PAL)
	COLC (NTSC)
	COLS (SECAM)

CAUTION : Never try to perform initialization unless you have changed the memory IC.

3. SELECTING THE ADJUSTING ITEMS

1) Every pressing of CHANNEL ▲ button in the service mode changes the adjustment items in the order of table-2. (▼ button for reverse order)

Refer to table-2 for preset data of adjustment mode.
(See SETTING & ADJUSTING DATA on page 13)

4. ADJUSTING THE DATA

1) Pressing of VOLUME ◿ +/– button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

5. EXIT FROM SERVICE MODE

1) Pressing POWER button to turn off the TV once.

■ INITIALIZATION OF MEMORY DATA OF QA02

After replacing QA02, the following initialization is required.

1. Enter the service mode, then select any register item.
2. Press and hold the CALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been complated.
3. Check the picture carefully. If necessary, adjust any adjustment item above. Perform "Auto search Memory".

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

ELECTRICAL ADJUSTMENTS

Model C80 Series (Reference factory adjustments)

Item: [AFT],[LAFT],[RAGC],[LAGC]
The entire set (including the micro) must be powered for this alignment

For sets using the TB1231N Chroma Device the following method must be used:
UK / German Sets (1480TB,1480RB,1480RD,2181TB,2180TD) initial batches only:

1) Disconnect IF Pad, and set service and design mode.
2) Apply IF Carrier Signal at 38.9MHz/95dBuV (39.5MHz/95dBuV for UK) to the cct side of the IF pad.
3) Ensure Bus-Data is as follows:
   [AFT] = 40H
4) Attach DVM to Q501 #4 and record the voltage.
5) Using a ceramic trimmer adjust L161 until steep change of voltage between 0.2V and 4.8V (approximately).
6) Set the coil to get 2.5V (i.e. the centre of the slope).
7) Disconnect the DVM
8) Select RAGC in the service mode and adjust the RF-AGC of the tuner becomes 4V by pushing VOL ◿–/+ buttons on the remote.
9) Disconnect IF Signal Generator
10) Re-solder IF Pad.

For sets using the TB1238N Chroma Device the following method must be used as it can be adjusted automatically: (Every model after initial batches above)

UK / German Sets:

1) Disconnect IF Pad, and set to service and design mode.
2) Apply IF Carrier Signal at 38.9MHz/95dB uV (39.5MHz/95dBuV for UK) to the cct side of the IF Pad.
3) Push POS O button on Universal HHU then wait for "AFT OK" to appear on screen.
4) Select RAGC in the service mode and adjust the RF-AGC of the tuner becomes 4V by pushing VOL ◿–/+ buttons on the remote.
5) Disconnect IF Signal Generator
6) Re-solder IF Pad.

French Sets:

1) Ensure Position {n} is in the UHF Band in any system
2) Disconnect IF Pad and and select position {n}, and set service and design mode.
3) Appy IF Carrier Signal of 38.9MHz/95dbuV to the cct side of the IF pad.
4) Push POS O button on Universal HHU then wait for "AFT OK" to appear on screen.
5) Select RAGC in the service mode and adjust the RF-AGC of the tuner becomes 4V by pushing VOL ◿–/+ buttons on the remote.
6) Select LAGC in the Service mode and input the data value same as RAGC mode.
7) Disconnect IF Signal Generator and re-solder IF Pad.

[There will be no French sets using the TB1231N V/C/D IC, all sets will eventually use the TB1238N device. The automatic system DOES NOT require a 34.47MHz signal for SECAM L alignment, as the frequencies are generated internally.
(The Universal HHU commands are Listed on the end of this document including AFT/AGC)

Item [SCNT] NO ADJUSTMENT

Name: SUB-CONTRAST

SETTING:

Input Signal:

Measurement Place:

Adjustment Method:

Standard:

Item [BRTC]

Name: SUB-BRIGHT CENTRE

SETTING: Set user control setting to STANDARD 1

Input Signal: SUB-BRIGHT SIGNAL

Measurement Place: On Picture

Adjustment Method: Adjust the number of Black Steps visible on the picture

Standard: 4th bar from black 1.5bars

Note: Adjust last

Item [COLP] NO ADJUSTMENT

Name: SUB-COLOUR CENTRE (PAL)

SETTING:

Input Signal:

Measurement Place:

Adjustment Method:

Standard:

Item [TNTC] NO ADJUSTMENT { [TnTC] on REMOTE model }

Name: SUB-TINT CENTRE (M-NTSC Mode)
SETTING:
Input Signal:
Measurement Place:
Adjustment Method:
Standard:

Item [COLC] NO ADJUSTMENT

Name: SUB-COLOUR CENTRE (NTSC / PAL)
SETTING:
Input Signal:
Measurement Place:
Adjustment Method:
Standard:

Item [RCUT],[GCUT],[BCUT],[GDRV],[BDRV],[SCREEN VR]

Name: CUT-OFF/DRIVE ADJUST
SETTING: [RCUT],[GCUT],[BCUT] data set to 20H
[GDRV],[BDRV] data set to 40H
Set to Horizontal Line mode
Input Signal: White-Balance Signal (Reduced Dual Window Patten)
Measurement Place: On Picture
Adjustment Method:
Raise the screen VR gradually and stop in the place where the line of either R or G or B shines slightly. Set the VR position at that point.
Raise the CUT-OFF data of the two colours that did not appear first and stop when the line becomes white.
Come out of Horizontal Line mode and using white balance gear adjust [GCUT],[BCUT] in Low-Lights (4 Ft-Lbts) and [GDRV],[BDRV] in High-Lights (30 Ft-Lbts) until Standard achieved in both conditions.
Standard:
103cd/m^2(30 Ft-Lbts) 8750k +0.0075uv
17cd/m^2(4 Ft-Lbts) 8750k +0.0020uv
(Automatic may be possible, [GDRV],[BDRV] might be deleted on 14 on future models)

Item [SRY],[SBY] { [SR],[SY] on REMOTE model }

Name: SECAM R-Y/B-Y BLACK LEVEL SETTING

SETTING: COLOUR: MID

Input Signal: Two-tone White-Balance Signal

Measurement Place: On Picture

Adjustment Method:

1) Remember settings of the PAL White-Balance Adjustment on the Low-Light.
2) Select Position 2 on the selector box and confirm that the three colour boxes are visible in the lower left hand corner of the screen.
3) Adjust [SRY] for a reading of within 2 indicators on the **Green** scale with respect to the original results obtained from point (1) above
4) Adjust [SBY] for a reading of within 2 indicators on the **Blue** scale with respect to the original results obtained from point (1) above
5) Re-select position 1 on the switch box to confirm that the setting are within 2 on scale.

Standard:

Item [COLS] NO ADJUSTMENT

Name: SUB-COLOUR CENTRE (SECAM)

SETTING:

Input Signal:

Measurement Place:

Adjustment Method:

Standard:

Item [VPOS] NO ADJUSTMENT { [VP50] on REMOTE model }

Name: VERTICAL PICTURE POSITION

SETTING:

Input Signal:

Measurement Place:

Adjustment Method:

Item [HIT]
Name: VERTICAL HEIGHT ADJUSTMENT SETTING: CONTRAST=MAX BRIGHT=CENTRE COLOUR=CENTRE Input Signal: WG Philips Pattern (Do not use French SECAM) Measurement Place: On Picture Adjustment Method: Adjust the [HIT] Bus-Data until castellations just disappear from Top and Bottom of picture

Item [HOPS]
Name: HORIZONTAL PICTURE POSITION SETTING: CONTRAST=MAX BRIGHT=CENTRE COLOUR=CENTRE Input Signal: WG Philips Pattern (Do not use French SECAM) Measurement Place: On Picture Adjustment Method: Adjust the [HOPS] Bus-Data for the best Horizontal centring

CIRCUIT CHECKS

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. Checking should be done following the steps below.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage must be measured below Ⓑ kV.

Refer to table-1 for high voltage Ⓑ.
(See SETTING & ADJUSTING DATA on page 13)

4. Vary the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

CHAPTER 2 SPECIFIC INFORMATIONS

SETTING & ADJUSTING DATA

【 SAFETY INSTRUCTIONS 】

		14"
HIGH VOLTAGE AT ZERO BEAM:	Ⓐ	23.8kV
MAX HIGH VOLTAGE:	Ⓑ	26.0 kV
AC VOLTAGE	Ⓒ	220~240V

Table-1

【 SERVICE MODE 】

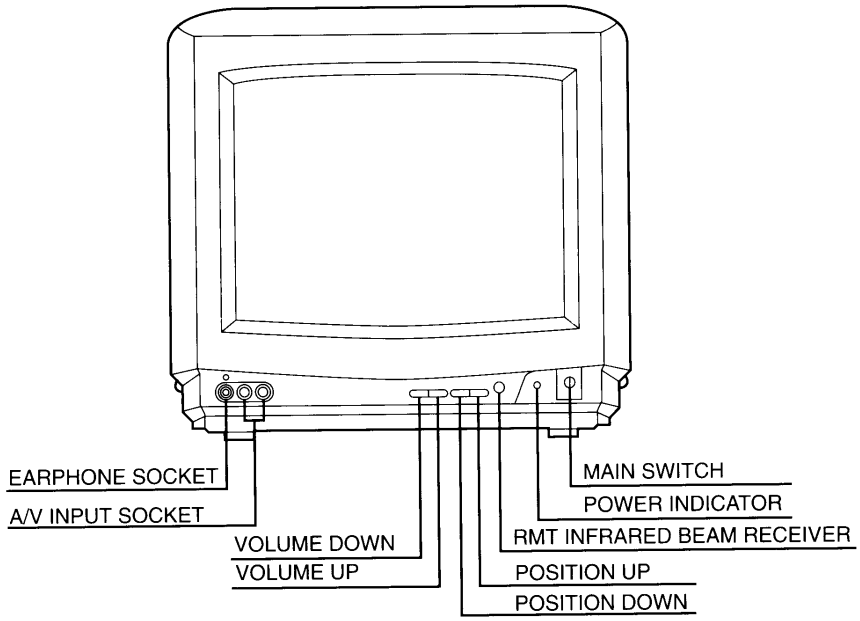
ADJUSTING ITEMS AND DATA IN THE SERVICE AND DESIGN MODE:

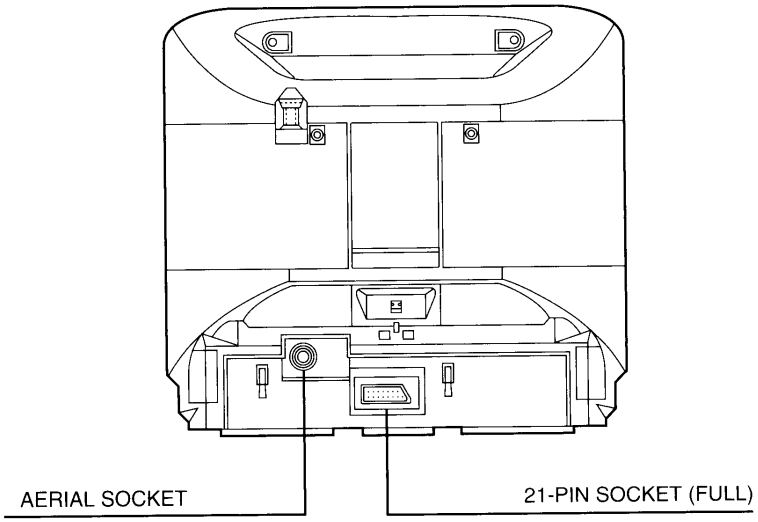
Item	Name of adjustment	Preset	Data
RCUT	R CUTOFF	20H	←
GCUT	G CUTOFF	20H	←
BCUT	B CUTOFF	20H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
SCNT	SUB-CONTRAST	05H	07H
BRTC	SUB-BRIGHT	40H	31H
COLC	SUB-COLOR	00H	←

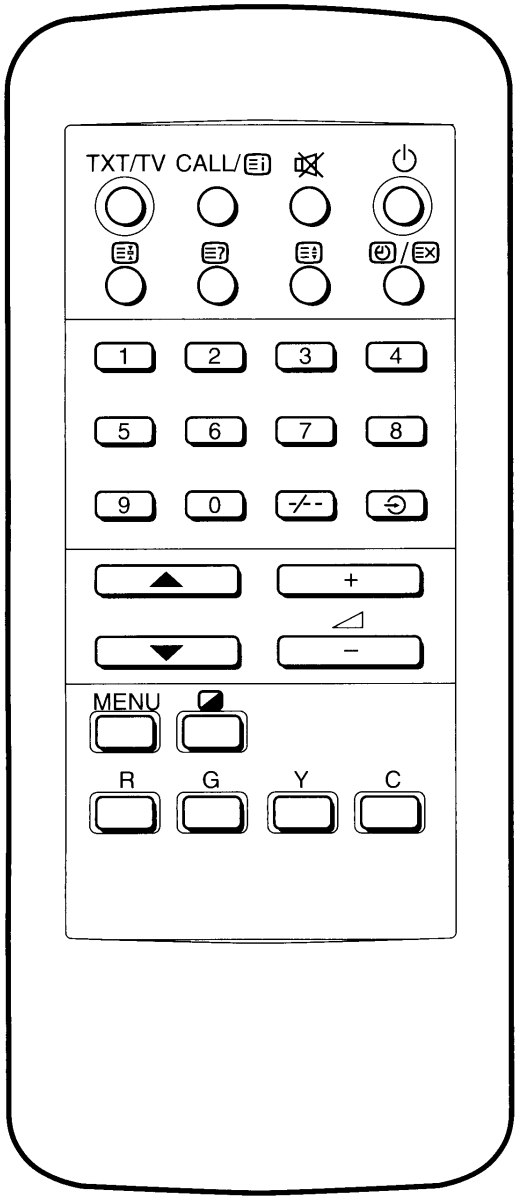
Item	Name of adjustment	Preset	Data
TNTC	SUB-TINT	3CH	←
COLS	SUB COLOR CEN SEC	40H	←
HPOS	HORIZ. POSITION	11H	13H
VP50	VERT. POSITION	03H	OCH
HIT	HEIGHT	20H	←
VLIS	50/60HZ V-LINE	FFH	00H
SBY	SECAM OFFSET B-Y	08H	09H
SRY	SECAM OFFSET B-Y	08H	0DH

Table-2

LOCATION OF CONTROLS







KEY ASSIGNMENT

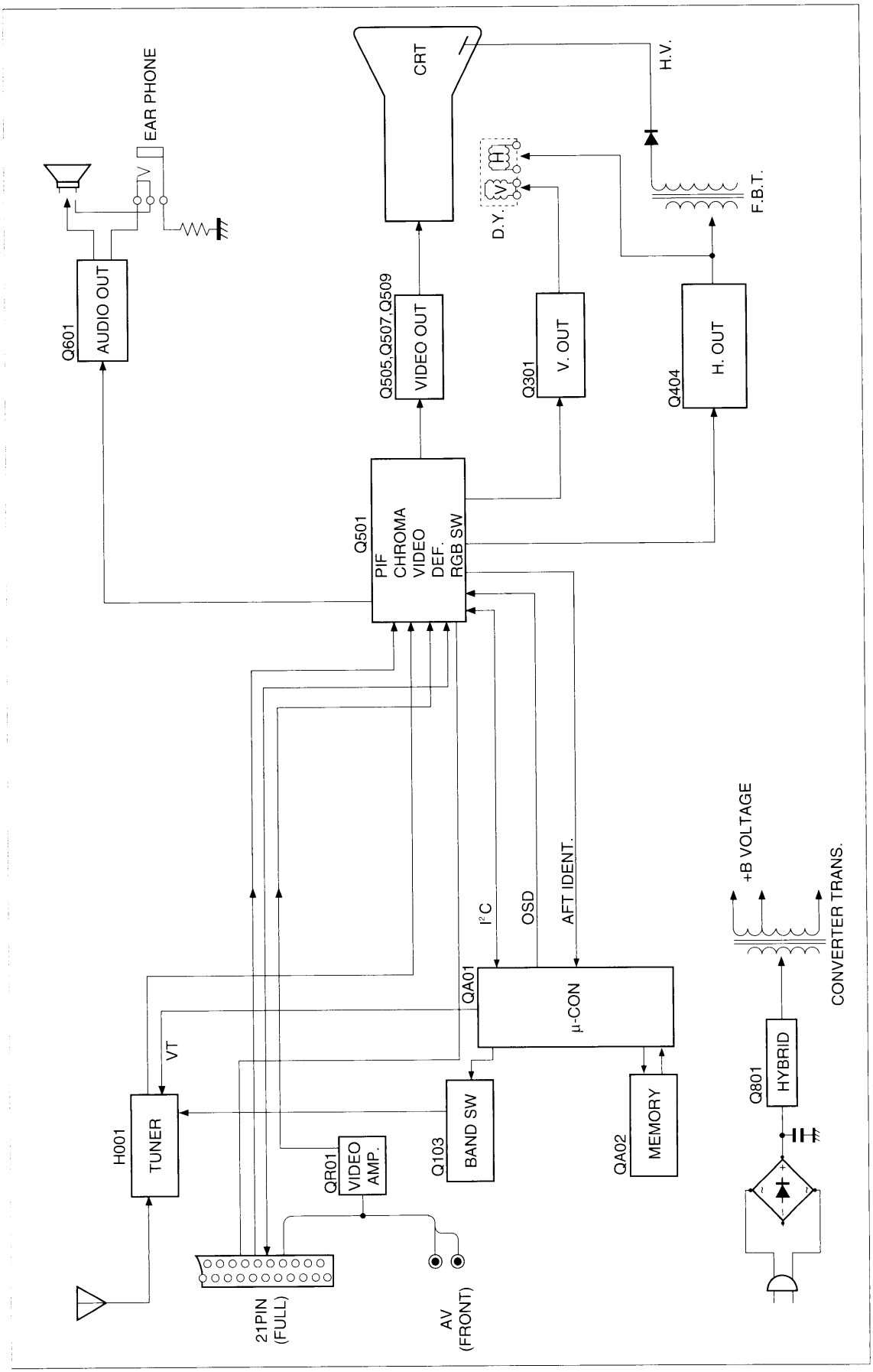
⏻ ..... ON/STAND-BY
🔇 ..... MUTE
CALL ..... DISPLAY CALL
MENU ..... TUNING & OTHER MENU
◪ ..... PICTURE MENU
1~9,0 ..... TEN KEY
- / - - ..... 1 or 2 place
⏎ ..... VIDEO INPUT (EXTERNAL INPUT SOURCE SW.)
◿ ..... VOLUME
+ ..... LEVEL PLUS (VOLUME, MENU)
− ..... LEVEL MINUS (VOLUME, MENU)
▲ ..... UP (POSI., CH., TEXT PAGE)
▼ ..... DOWN (POSI., CH., TEXT PAGE)

TELE-TEXT
- TXT/TV ..... TEXT, MIX, TV MODE SW.
- HOLD ..... HOLD
- <TEXT MODE> ..... REVEAL / CONCEAL
- <TEXT MODE> ..... F-T-B (FULL, TOP, BOTTOM)
- TIME DISPLAY (TV MODE) / TEXT CLEAR (TEXT MODE)
- INDEX, INITIAL

FLOF COLOUR KEY (4 key used)
Red/Green/Yellow/Blue

SPECIFIC INFORMATIONS

CIRCUIT BLOCK DIAGRAM



CHASSIS AND CABINET REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE. Do not degrade the safety of the receiver through improper servicing.

NOTICE:
- *The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.*
- *The PC board assembly with ∗ mark is no longer available after the end of the production.*

Model : 1470TB/1470TBW/1470RB/1470RBW

Capacitors ..... CD : Ceramic Disk PF : Plastic Film EL : Electrolytic
Resistors ..... CF : Carbon Film CC : Carbon Composition MF : Metal Film
OMF : Oxide Metal Film VR : Variable Resistor FR : Fusible Resistor
(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C102	24232103	CD, 0.01μF, +80%, −20%
C104	24232103	CD, 0.01μF, +80%, −20%
C106	24232103	CD, 0.01μF, +80%, −20%
C107	24794102	EL, 1000μF, ±20%, 16V
C111	24538104	PF, 0.1μF
C131	24538474	PF, 0.47μF
C132	24474102	CD, 1000pF, ±10%
C133	24474102	CD, 1000pF, ±10%
C161	24794101	EL, 100μF, ±20%, 16V
C162	24473560	CD, 56pF
C163	24473560	CD, 56pF
C168	24232103	CD, 0.01μF, +80%, −20%
C190	24232103	CD, 0.01μF, +80%, −20%
C193	24797229	EL, 2.2μF, ±20%, 50V
C195	24232103	CD, 0.01μF, +80%, −20%
C196	24538104	PF, 0.1μF
C197	24538104	PF, 0.1μF
C198	24538104	PF, 0.1μF
C199	24232103	CD, 0.01μF, +80%, −20%
C202	24206010	EL, 1μF, 50V
C203	24206228	EL, 0.22μF, 50V
C204	24590222	PF, 2200pF
C205	24473100	CD, 10pF
C207	24538104	PF, 0.1μF
C208	24538104	PF, 0.1μF
C209	24538104	PF, 0.1μF
C210	24794101	EL, 100μF, ±20%, 16V
C211	24232103	CD, 0.01μF, +80%, −20%
C212	24473100	CD, 10pF
C213	24473100	CD, 10pF
C214	24473100	CD, 10pF
C215	24797100	EL, 10μF, ±20%, 50V
C217	24797010	EL, 1μF, ±20%, 50V
C219	24538474	PF, 0.47μF
C220	24212152	CD, 1500pF, ±10%
C221	24232103	CD, 0.01μF, +80%, −20%
C222	24795471	EL, 470μF, ±20%, 25V
C223	24666470	EL, 47μF, ±20%, 16V
C224	24232103	CD, 0.01μF, +80%, −20%
C227	24669010	EL, 1μF, ±20%, 50V

Location No.	Part No.	Description
C228	24590203	PF, 0.02μF
C229	24797478	EL, 0.47μF, ±20%, 50V
C230	24797478	EL, 0.47μF, ±20%, 50V
C231	24797478	EL, 0.47μF, ±20%, 50V
C232	24797478	EL, 0.47μF, ±20%, 50V
C234	24232103	CD, 0.01μF, +80%, −20%
C235	24794101	EL, 100μF, ±20%, 16V
C236	24797478	EL, 0.47μF, ±20%, 50V
C237	24212332	CD, 3300pF, ±10%
C238	24232103	CD, 0.01μF, +80%, −20%
C239	24794101	EL, 100μF, ±20%, 16V
C240	24538474	PF, 0.47μF
C241	24474101	CD, 100pF, ±10%
C242	24474221	CD, 220pF, ±10%
C243	24794101	EL, 100μF, ±20%, 16V
C244	24232103	CD, 0.01μF, +80%, −20%
C245	24794220	EL, 22μF, ±20%, 16V
C306	24212391	CD, 390pF, ±10%
C312	24590823	PF, 0.082μF
C313	24668101	EL, 100μF, ±20%, 35V
C314	24214102	CD, 1000pF, ±10%, 500V
C317	24617912	EL, 2.2μF, ±10%, 50V
C318	24666472	EL, 4700μF, ±20%, 16V
C323	24082049	PF, 0.047μF, 100V
C325	24668101	EL, 100μF, ±20%, 35V
C331	24668102	EL, 1000μF, ±20%, 35V
C332	24082057	PF, 0.22μF, 100V
C402	24797478	EL, 0.47μF, ±20%, 50V
C410	24082261	PF, 5600pF, 100V
C416	24214102	CD, 1000pF, ±10%, 500V
⚠C440	24082347	PF, 6700pF, ±3%, 1500V
C442	24095753	PF, 0.39μF, 200V
C445	24095903	PF, 0.056μF, ±10%, 250V
C446	24666471	EL, 470μF, ±20%, 16V
C447	24679479	EL, 4.7μF, ±20%, 250V
C448	24640908	EL, 33μF, ±20%, 160V
C449	24667102	EL, 1000μF, ±20%, 25V
⚠C463	24212152	CD, 1500pF, ±10%
C470	24666220	EL, 22μF, ±20%, 16V
C471	24538474	PF, 0.47μF
C481	24666220	EL, 22μF, ±20%, 16V

SPECIFIC INFORMATIONS

Location No.	Part No.	Description
C482	24666101	EL, 100μF, ±20%, 16V
C601	24795471	EL, 470μF, ±20%, 25V
C602	24538104	PF, 0.1μF
C603	24795221	EL, 220μF, ±20%, 25V
C605	24206010	EL, 1μF, 50V
C606	24795220	EL, 22μF, ±20%, 25V
C607	24590682	PF, 6800pF
C608	24797010	EL, 1μF, ±20%, 50V
C609	24794470	EL, 47μF, ±20%, 16V
C610	24206010	EL, 1μF, 50V
C611	24212102	CD, 1000pF, ±10%
C612	24212102	CD, 1000pF, ±10%
C613	24212102	CD, 1000pF, ±10%
C616	24797100	EL, 10μF, ±20%, 50V
C617	24206010	EL, 1μF, 50V
C618	24797470	EL, 47μF, ±20%, 50V
C619	24590152	PF, 1500pF
C620	24797229	EL, 2.2μF, ±20%, 50V
C623	24232103	CD, 0.01μF, +80%, −20%
C624	24232103	CD, 0.01μF, +80%, −20%
⚠C801	24082927	PF, 0.22μF, ±20%, AC275V
⚠C802	24094656	CD, 2200pF, ±20%, AC400V
⚠C803	24094656	CD, 2200pF, ±20%, AC400V
C804	24794470	EL, 47μF, ±20%, 16V
C807	24092281	CD, 4700pF, ±20%, AC250V
C808	24092281	CD, 4700pF, ±20%, AC250V
C809	24086871	EL, 120μF, ±20%, 400V
C812	24092341	CD, 470pF, ±10%, 2kV
C813	24095931	PF, 2200pF, 1250V
C814	24590223	PF, 0.022μF
C815	24590182	PF, 1800pF
C816	24666470	EL, 47μF, ±20%, 16V
C817	24676220	EL, 22μF, ±20%, 100V
C820	24794470	EL, 47μF, ±20%, 16V
C821	24797010	EL, 1μF, ±20%, 50V
C828	24212101	CD, 100pF, ±10%
C829	24795471	EL, 470μF, ±20%, 25V
C830	24092337	CD, 220pF, ±10%, 2kV
C831	24640932	EL, 100μF, ±20%, 160V
C835	24797479	EL, 4.7μF, ±20%, 50V
C836	24797100	EL, 10μF, ±20%, 50V
C837	24797100	EL, 10μF, ±20%, 50V
C838	24538474	PF, 0.47μF
C849	24214471	CD, 470pF, ±10%, 500V
C901	24700100	EL, 10μF, ±20%, 250V
C902	24095931	PF, 2200pF, 1250V
C903	24794100	EL, 10μF, ±20%, 16V
C904	24794220	EL, 22μF, ±20%, 16V
C931	24212331	CD, 330pF, ±10%
C932	24212331	CD, 330pF, ±10%
C933	24212331	CD, 330pF, ±10%
C934	24794471	EL, 470μF, ±20%, 16V
C936	24797479	EL, 4.7μF, ±20%, 50V
CA01	24474101	CD, 100pF, ±10%
CA14	24232103	CD, 0.01μF, +80%, −20%
CA15	24794100	EL, 10μF, ±20%, 16V
CA16	24232103	CD, 0.01μF, +80%, −20%
CA18	24232103	CD, 0.01μF, +80%, −20%
CA19	24794470	EL, 47μF, ±20%, 16V
CA20	24474101	CD, 100pF, ±10%
CA21	24435470	CD, 47pF, 500V
CA22	24538104	PF, 0.1μF (1480TB/TBW)
CA24	24538104	PF, 0.1μF (1480TB/TBW)
CA37	24538104	PF, 0.1μF

Location No.	Part No.	Description
CA39	24474391	CD, 390pF, ±10%
CA40	24212221	CD, 220pF, ±10%
CA42	24538104	PF, 0.1μF
CA43	24538104	PF, 0.1μF
CA44	24794470	EL, 47μF, ±20%, 16V (1480TB/TBW)
CA45	24473560	CD, 56pF
CA46	24473560	CD, 56pF
CA47	24473390	CD, 39pF (1480RB/RBW)
CA48	24473390	CD, 39pF (1480RB/RBW)
CA49	24475222	CD, 2200pF
CA50	24797479	EL, 4.7μF, ±20%, 50V
CB01	24212472	CD, 4700pF, ±10%
CB02	24212561	CD, 560pF, ±10%
CB03	24763331	EL, 330μF, ±20%, 16V
CB04	24436181	CD, 180pF
CB05	24206010	EL, 1μF, 50V
CR01	24794100	EL, 10μF, ±20%, 16V
CR02	24797010	EL, 1μF, ±20%, 50V
CR03	24797010	EL, 1μF, ±20%, 50V
CR04	24797010	EL, 1μF, ±20%, 50V
CR05	24797010	EL, 1μF, ±20%, 50V
CR06	24797010	EL, 1μF, ±20%, 50V
CR07	24797010	EL, 1μF, ±20%, 50V
CR08	24473270	CD, 27pF
CV01	24794101	EL, 100μF, ±20%, 16V
CV02	24793471	EL, 470μF, ±20%, 10V

RESISTORS

R002	24366102	CF, 1k ohm
R101	24366101	CF, 100 ohm
R103	24366103	CF, 10k ohm
R105	24366101	CF, 100 ohm
R106	24366153	CF, 15k ohm
R109	24366563	CF, 56k ohm
R135	24366682	CF, 6800 ohm
R136	24366122	CF, 1200 ohm
R137	24366681	CF, 680 ohm
R138	24366360	CF, 36 ohm
R174	24366392	CF, 3900 ohm
R175	24366471	CF, 470 ohm
R179	24366201	CF, 200 ohm
R180	24366331	CF, 330 ohm
R181	24366221	CF, 220 ohm
R182	24366820	CF, 82 ohm
R185	24366101	CF, 100 ohm
R186	24366391	CF, 390 ohm
R187	24366223	CF, 22k ohm
R188	24366223	CF, 22k ohm
R189	24366102	CF, 1k ohm
R191	24942226	CC, 22M ohm, 1/2W
R201	24366222	CF, 2200 ohm
R204	24366751	CF, 750 ohm (1480TB/TBW)
R205	24366303	CF, 30k ohm
R206	24366271	CF, 270 ohm
R207	24366271	CF, 270 ohm
R208	24366271	CF, 270 ohm
R209	24366223	CF, 22k ohm
R210	24366101	CF, 100 ohm
R211	24366101	CF, 100 ohm
R212	24552221	OMF, 220 ohm, 1/2W
R213	24366103	CF, 10k ohm
R214	24366472	CF, 4700 ohm
R215	24366561	CF, 560 ohm

Location No.	Part No.	Description
R216	24366102	CF, 1k ohm
R217	24366101	CF, 100 ohm
R218	24366824	CF, 820k ohm
R219	24366151	CF, 150 ohm
R220	24366102	CF, 1k ohm (1480TB/TBW)
R221	24366104	CF, 100k ohm
R222	24366472	CF, 4700 ohm
R223	24366222	CF, 2200 ohm
R224	24366123	CF, 12k ohm
R225	24366102	CF, 1k ohm (1480TB/TBW)
R240	24366682	CF, 6800 ohm
R241	24366223	CF, 22k ohm
R244	24366152	CF, 1500 ohm
R316	24366102	CF, 1k ohm
R317	24366563	CF, 56k ohm
R318	24366433	CF, 43k ohm
R319	24552132	OMF, 1300 ohm, 1/2W
R320	24383271	OMF, 270 ohm, 2W
R321	24366393	CF, 39k ohm
R322	24366224	CF, 220k ohm
R323	24322229	OMF, 2.2 ohm, 1W
R325	24366203	CF, 20k ohm
⚠R327	24339479	MF, 4.7 ohm, 2W
R330	24321109	MF, 1 ohm, 1/2W
R333	24366222	CF, 2200 ohm
R360	24366622	CF, 6200 ohm (1480TB/TBW)
R410	24552472	OMF, 4700 ohm, 1/2W
R411	24366561	CF, 560 ohm
R412	24322129	MF, 1.2 ohm, 1W
R413	24382471	OMF, 470 ohm, 1W
R414	24366181	CF, 180 ohm
R416	24510182	Cement, 1800 ohm, 5W
R440	24366103	CF, 10k ohm
⚠R444	24338398	MF, 0.39 ohm, 1W
R445	24552331	OMF, 330 ohm, 1/2W
R446	24383331	OMF, 330 ohm, 2W
⚠R448	24338338	MF, 0.33 ohm, 1W
R470	24338828	MF, 0.82 ohm, 1W
R471	24552101	OMF, 100 ohm, 1/2W
R472	24376393	CF, 39k ohm, 1/2W
R474	24366331	CF, 330 ohm
R475	24366102	CF, 1k ohm
R477	24366203	CF, 20k ohm
R517	24366103	CF, 10k ohm
R580	24366103	CF, 10k ohm
R601	24366339	CF, 3.3 ohm
R602	24366123	CF, 12k ohm
R603	24366182	CF, 1800 ohm
R604	24366103	CF, 10k ohm
R605	24552331	OMF, 330 ohm, 1/2W
R607	24366103	CF, 10k ohm
R610	24366332	CF, 3300 ohm
R614	24366562	CF, 5600 ohm
R615	24366562	CF, 5600 ohm
R616	24366562	CF, 5600 ohm
R618	24366474	CF, 470k ohm
R623	24366682	CF, 6800 ohm
R624	24366681	CF, 680 ohm
R625	24366104	CF, 100k ohm
R626	24366103	CF, 10k ohm
R628	24366104	CF, 100k ohm
R629	24366153	CF, 15k ohm
R630	24366392	CF, 3900 ohm
⚠R801	24009954	Metal-Glazed Resistor, 2.2M ohm, 1/2W

Location No.	Part No.	Description
R803	24366824	CF, 820k ohm
R804	24366561	CF, 560 ohm
R805	24377394	CF, 390k ohm, 1W
R806	24383470	OMF, 47 ohm, 2W
R807	24383330	OMF, 33 ohm, 2W
R808	24531100	FR, 10 ohm, 1/2W
R809	24366561	CF, 560 ohm
R810	24366561	CF, 560 ohm
R811	24322398	MF, 0.39 ohm, 1W
R812	24366470	CF, 47 ohm
R813	24366561	CF, 560 ohm
R814	24366102	CF, 1k ohm
R815	24366561	CF, 560 ohm
R816	24366103	CF, 10k ohm
R817	24366102	CF, 1k ohm
R818	24366102	CF, 1k ohm
R819	24321689	OMF, 6.8 ohm, 1/2W
R820	24366561	CF, 560 ohm
R825	24366472	CF, 4700 ohm
R828	24366339	CF, 3.3 ohm
R842	24366681	CF, 680 ohm
R843	24366821	CF, 820 ohm
⚠R844	24005007	Metal-Glazed Resistor, 8.2M ohm, 1W
R848	24366392	CF, 3900 ohm
R860	24366122	CF, 1200 ohm
R865	24366681	CF, 680 ohm
R866	24366471	CF, 470 ohm
R867	24366103	CF, 10k ohm
R868	24366472	CF, 4700 ohm
R870	24383822	OMF, 8200 ohm, 2W
R871	24366472	CF, 4700 ohm
R872	24510479	Cement, 4.7 ohm, 5W
R878	24531270	FR, 27 ohm, 1/2W
R879	24366472	CF, 4700 ohm
R884	24531120	FR, 12 ohm, 1/2W
⚠R890	24019419	PTC Thermistor, 18 ohm
R893	24366103	CF, 10k ohm
R901	24552272	OMF, 2700 ohm, 1/2W
R902	24552272	OMF, 2700 ohm, 1/2W
R903	24552272	OMF, 2700 ohm, 1/2W
R904	24366102	CF, 1k ohm
R905	24366229	CF, 2.2 ohm
⚠R920	24000884	FR, 3 ohm, 1W
R928	24366101	CF, 100 ohm
R930	24366681	CF, 680 ohm
R931	24366102	CF, 1k ohm
R932	24366361	CF, 360 ohm
R933	24366681	CF, 680 ohm
R934	24366681	CF, 680 ohm
R935	24366681	CF, 680 ohm
R936	24366471	CF, 470 ohm
R937	24366471	CF, 470 ohm
R938	24366471	CF, 470 ohm
R947	24552820	OMF, 82 ohm, 1/2W
R948	24366101	CF, 100 ohm
R961	24366270	CF, 27 ohm
R962	24366270	CF, 27 ohm
R963	24366270	CF, 27 ohm
R966	24366101	CF, 100 ohm
R967	24366101	CF, 100 ohm
R991	24382183	OMF, 18k ohm, 1W
R992	24382183	OMF, 18k ohm, 1W
R993	24382183	OMF, 18k ohm, 1W

Location No.	Part No.	Description
RA01	24366103	CF, 10k ohm
RA02	24366472	CF, 4700 ohm
RA03	24366103	CF, 10k ohm
RA05	24366103	CF, 10k ohm
RA06	24366103	CF, 10k ohm
RA07	24366472	CF, 4700 ohm
RA09	24019001	MF, 100k ohm, ±1%, 1/4W
RA10	24366102	CF, 1k ohm (1480TB/TBW)
RA11	24366182	CF, 1800 ohm (1480TB/TBW)
RA12	24366103	CF, 10k ohm
RA14	24366103	CF, 10k ohm
RA15	24366331	CF, 330 ohm
RA16	24366331	CF, 330 ohm
RA24	24366225	CF, 2.2M ohm
RA25	24366333	CF, 33k ohm
RA27	24366333	CF, 33k ohm
RA28	24000242	MF, 18k ohm, ±1%, 1/4W
RA33	24366391	CF, 390 ohm
RA34	24000245	MF, 33k ohm, ±1%, 1/4W
RA35	24366223	CF, 22k ohm
RA37	24366273	CF, 27k ohm (1480TB/TBW)
RA40	24366102	CF, 1k ohm (1480TB/TBW)
RA41	24366103	CF, 10k ohm
RA42	24366103	CF, 10k ohm
RA45	24366103	CF, 10k ohm
RA49	24366103	CF, 10k ohm
RA54	24366472	CF, 4700 ohm
RA57	24366103	CF, 10k ohm
RA58	24366222	CF, 2200 ohm
RA60	24366331	CF, 330 ohm
RA61	24366103	CF, 10k ohm
RA62	24366223	CF, 22k ohm
RA64	24366103	CF, 10k ohm
RA65	24366103	CF, 10k ohm
RA70	24366332	CF, 3300 ohm
RA71	24366682	CF, 6800 ohm
RA72	24366203	CF, 20k ohm
RA76	24366103	CF, 10k ohm
RA78	24366102	CF, 1k ohm
RA81	24366471	CF, 470 ohm
RA86	24366103	CF, 10k ohm
RA88	24366103	CF, 10k ohm
RA90	24366103	CF, 10k ohm
RA91	24366102	CF, 1k ohm
RA96	24366123	CF, 12k ohm
RA97	24366152	CF, 1500 ohm
RB01	24366223	CF, 22k ohm
RB02	24366392	CF, 3900 ohm
RB03	24366392	CF, 3900 ohm
RB04	24366123	CF, 12k ohm
RB05	24366333	CF, 33k ohm
RB06	24366564	CF, 560k ohm
RB07	24366182	CF, 1800 ohm
RB08	24366471	CF, 470 ohm
RE01	24366391	CF, 390 ohm
RR01	24366472	CF, 4700 ohm
RR02	24366472	CF, 4700 ohm
RR03	24366103	CF, 10k ohm
RR04	24366333	CF, 33k ohm
RR05	24366103	CF, 10k ohm
RR06	24366102	CF, 1k ohm
RR16	24366331	CF, 330 ohm
RR17	24366331	CF, 330 ohm
RR18	24366331	CF, 330 ohm

Location No.	Part No.	Description
RV01	24552101	OMF, 100 ohm, 1/2W
RV02	24552101	OMF, 100 ohm, 1/2W
RV04	24366680	CF, 68 ohm
RV05	24366103	CF, 10k ohm
RV08	24366750	CF, 75 ohm
RV09	24366101	CF, 100 ohm
RV10	24366750	CF, 75 ohm
RV11	24366101	CF, 100 ohm
RV12	24366750	CF, 75 ohm
RV13	24366101	CF, 100 ohm
RV14	24366750	CF, 75 ohm
RV15	24366750	CF, 75 ohm
RV26	24366391	CF, 390 ohm
RV27	24366391	CF, 390 ohm
RV28	24366391	CF, 390 ohm

COILS & TRANSFORMERS

L101	23238558	Coil, Peaking, TRF4R47AJ
L102	23221803	Coil, Choke, TLN3040D
L105	23261985	Coil, RF Choke, TRF9221
L107	23238713	Coil, Peaking, TRF4120AJ
L161	23262813	Coil, IF, TRF1077D
L202	23289100	Coil, Peaking, TRF4100AF
L204	23289100	Coil, Peaking, TRF4100AF
L205	23289680	Coil, Peaking, TRF4680AF
L311	23103859	Coil (Ferrite Bead), TEM2011
L405	23221739	Coil, Choke, TRF9252D
L408	23221722	Coil, Choke, TLN3142D
L410	23289100	Coil, Peaking, TRF4100AF
L811	23103859	Coil (Ferrite Bead), TEM2011
L821	23280016	Coil, Peaking, TRF4100AZ
L823	23103859	Coil (Ferrite Bead), TEM2011
L826	23280016	Coil, Peaking, TRF4100AZ
L829	23103859	Coil (Ferrite Bead), TEM2011
L866	23289229	Coil, Peaking, TRF42R2AF
⚠L901	23200691	Coil, Degaussing, TSB-2229AT
L990	23289100	Coil, Peaking, TRF4100AF
LA02	23289109	Coil, Peaking, TRF41R0AF
LA03	23103859	Coil (Ferrite Bead), TEM2011
LA04	23103859	Coil (Ferrite Bead), TEM2011 (1480TB/TBW)
LA05	23103859	Coil (Ferrite Bead), TEM2011 (1480TB/TBW)
LA06	23238708	Coil, Peaking, TRF4330AJ (1480RB/RBW)
⚠T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠T461	23236501	Transformer, Flyback, TFB4124AE
⚠T801	23211929	Line Filter, TRF3130
⚠T803	23217274	Transformer, Converter, TPW3322AR

SEMICONDUCTORS

Q105	A6708871	Transistor, 2SC388ATM
Q110	A6317440	Transistor, 2SC1815-Y
Q111	A6317440	Transistor, 2SC1815-Y
Q112	A6534053	Transistor, 2SA1015-Y(TE
Q201	A6317440	Transistor, 2SC1815-Y
Q210	23114530	Transistor, 2SA933S-Q
Q212	A6317440	Transistor, 2SC1815-Y (1480TB/TBW)
Q301	B0377890	IC, TA8403K

Location No.	Part No.	Description
Q301B	23037310	Screw, BTBW3X10 SZN
Q302	A6317440	Transistor, 2SC1815-Y (1480TB/TBW)
Q402	A6330069	Transistor, 2SC2482 FA-1
Q404	A6871242	Transistor, 2SD1554
Q404B	23037310	Screw, BTBW3X10 SZN
Q470	A6547250	Transistor, 2SA1320
Q480	23314141	Transistor, 2SC3852
Q480B	23035308	Screw, BTB3X8SZN
Q501	B0101539	IC, TB1231N(FA-1
Q601	23119668	IC, TDA2611A
Q602	23318916	IC, MC14053BCP
Q603	A6342206	Transistor, 2SC2878-A(TE
Q604	A6534053	Transistor, 2SA1015-Y(TE
Q606	A6010040	Transistor, RN2004
Q608	A6317440	Transistor, 2SC1815-Y
Q609	A6342206	Transistor, 2SC2878-A(TE
Q801	23314146	IC(STR), STR58041
Q802	A6534145	Transistor, 2SA1020-Y(C)
Q803	A6333346	Transistor, 2SC2655-Y(C)
Q804	A6317440	Transistor, 2SC1815-Y
Q805	A6317440	Transistor, 2SC1815-Y
Q806	A6317440	Transistor, 2SC1815-Y
⚠Q826	A8643108	Photo Coupler, TLP621(GR-LF
Q828	A6317440	Transistor, 2SC1815-Y
Q831	A6317440	Transistor, 2SC1815-Y
Q835	23318299	IC, L78MR05
Q836	A6534053	Transistor, 2SA1015-Y(TE
Q861	23314141	Transistor, 2SC3852
Q861B	70391356	Screw, BITTB3X10 SZN
Q870	A6333346	Transistor, 2SC2655-Y(C)
Q871	A6317440	Transistor, 2SC1815-Y
Q905	A6330069	Transistor, 2SC2482 FA-1
Q907	A6330069	Transistor, 2SC2482 FA-1
Q909	A6330069	Transistor, 2SC2482 FA-1
Q910	A6330069	Transistor, 2SC2482 FA-1
Q911	23114530	Transistor, 2SA933S-Q
QA01	23906524	IC, SAA5290ZP/084/M5 (1480TB/TBW)
QA02	23904706	IC, NM24C02EN
QA03	A6317440	Transistor, 2SC1815-Y
QA04	A6317440	Transistor, 2SC1815-Y
QA08	A6317440	Transistor, 2SC1815-Y
QA09	A6317440	Transistor, 2SC1815-Y
QA10	A6317440	Transistor, 2SC1815-Y
QA25	A6317440	Transistor, 2SC1815-Y
QB01	A6317440	Transistor, 2SC1815-Y
QB02	A6534053	Transistor, 2SA1015-Y(TE
QR01	70129053	IC, BA7603
QR02	A6002040	Transistor, RN1204
QR03	A6734590	Transistor, 2SC752(G)TM-Y
QR05	A6317440	Transistor, 2SC1815-Y
QR07	A6002040	Transistor, RN1204
QV01	A6317440	Transistor, 2SC1815-Y
D108	23115878	Diode, Zener, μPC574J, (L)
D109	23115599	Diode, 1N4148
D111	23115599	Diode, 1N4148
D201	A7150258	Diode, 1SS176
D202	23316667	Diode, Zener, MTZJ4.7C
D206	23115599	Diode, 1N4148
D208	23115599	Diode, 1N4148
D301	23118479	Diode, BYD33J
D302	23118479	Diode, BYD33J
D312	23316794	Diode, SC570A

Location No.	Part No.	Description
D401	23316668	Diode, Zener, MTZJ5.1A
D402	23316666	Diode, Zener, MTZJ4.7B
D403	23316688	Diode, Zener, MTZJ9.1C
D406	23118479	Diode, BYD33J
D408	23118052	Diode, RU4Z
D471	A7801205	SCR, SF0R3G42
D474	23316728	Diode, Zener, MTZJ16B
D475	23316719	Diode, Zener, MTZJ12B
D601	23115599	Diode, 1N4148
D602	23115599	Diode, 1N4148
D603	23115599	Diode, 1N4148
D610	23115599	Diode, 1N4148
D801	23118124	Diode, LB-156 (LF-B)
D810	23316725	Diode, Zener, MTZJ15B
D811	23115599	Diode, 1N4148
D812	23118479	Diode, BYD33J
D813	23115599	Diode, 1N4148
D814	23316672	Diode, Zener, MTZJ5.6B
D815	23115599	Diode, 1N4148
D816	23316648	Diode, Zener, MTZJ2.2A
D817	23118479	Diode, BYD33J
D818	23118479	Diode, BYD33J
D819	23316675	Diode, Zener, MTZJ6.2B
D830	23118479	Diode, BYD33J
D832	23118479	Diode, BYD33J
D847	23115599	Diode, 1N4148
D848	23316666	Diode, Zener, MTZJ4.7B
D860	23316674	Diode, Zener, MTZJ6.2A
D861	23316672	Diode, Zener, MTZJ5.6B
D870	23115599	Diode, 1N4148
D878	23316689	Diode, Zener, MTZJ10A
D991	23316554	Diode, 1SS146
D992	23316554	Diode, 1SS146
D993	23316554	Diode, 1SS146
D994	23115599	Diode, 1N4148
DA01	23316675	Diode, Zener, MTZJ6.2B
DA02	23115599	Diode, 1N4148
DA03	23115599	Diode, 1N4148
DA32	23115599	Diode, 1N4148
DE50	23358504	LED, Red, SCL003URC3FX
DR04	23115599	Diode, 1N4148
DR06	23115599	Diode, 1N4148

MISCELLANEOUS

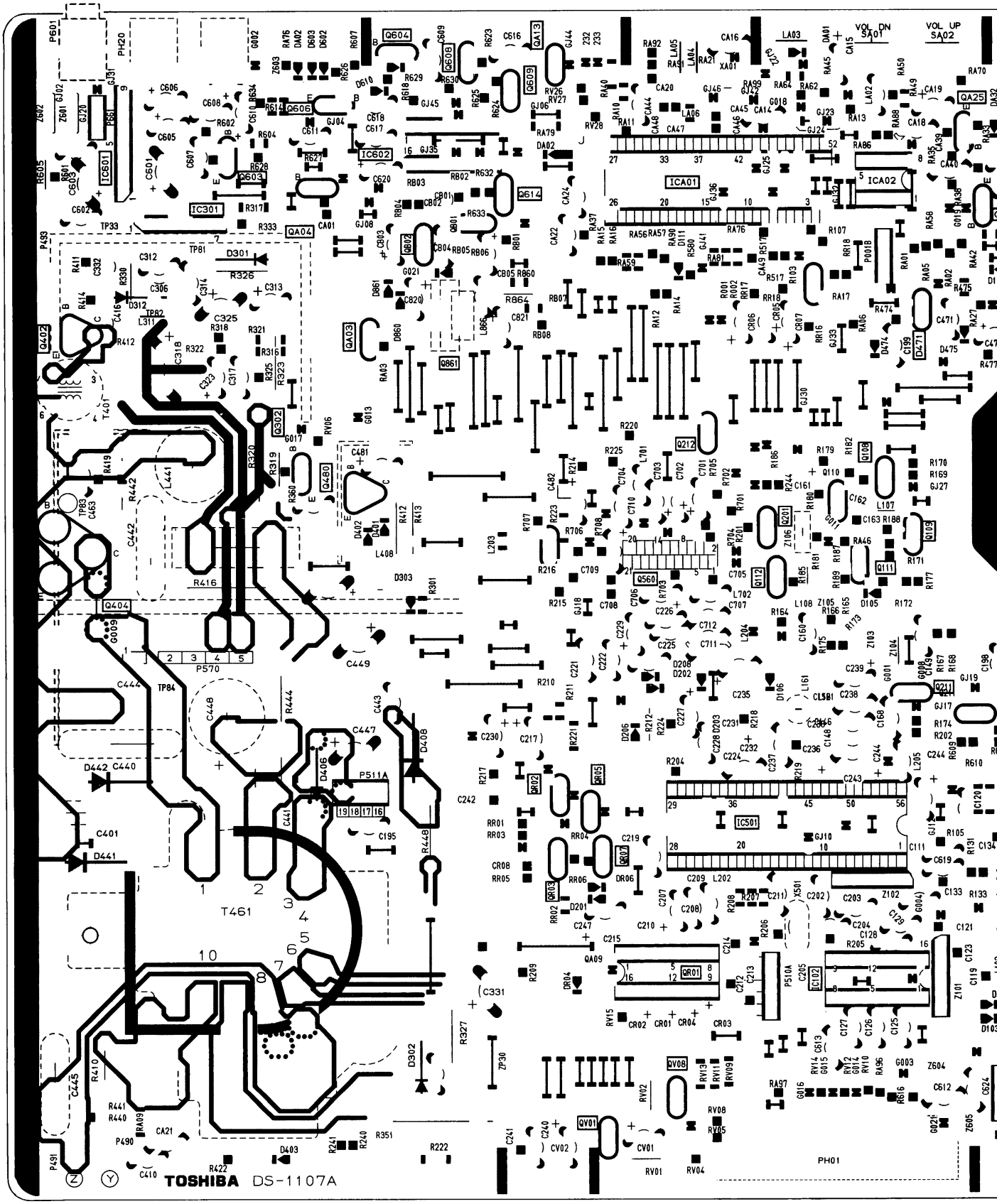
B202	23451654	Holder, FBT
⚠F801	23144507	Fuse, 3.15A
F801A	23165433	Holder, Fuse
⚠F803	23144876	Fuse, 0.5A
F803A	23165433	Holder, Fuse
G002	24366681	CF, 680 ohm
G003	24366681	CF, 680 ohm
G012	23115599	Diode, 1N4148
G013	23115599	Diode, 1N4148
G017	24366473	CF, 47k ohm (1480TB/TBW)
G019	24366102	CF, 1k ohm
G021	23289109	Coil, Peaking, TRF41R0AF
K901	23904750	IR Receiver
P601	23365292	Jack, Earphone
⚠P801	23372012	Power Cord
P803	23164725	Plug, 2P
PH01	23365598	Connector, 21Pin
PH20	23364692	Jack Phono, 2P
⚠S801	23145434	Switch, Power, 2C2P
SA01	23145430	Switch, Push, 1C1P

Location No.	Part No.	Description
SA02	23145430	Switch, Push, 1C1P
SA03	23145430	Switch, Push, 1C1P
SA04	23145430	Switch, Push, 1C1P
⚠V901A	23902022	Socket, CRT, 8P
W661	23351079	Speaker, SPK-1351, 77x77mm, 16 ohm
X501	23153979	Crystal, 4.43MHz
XA01	23153930	Crystal, 12.0MHz
Z102	23303135	Filter, 39.5M, OFWJ1951M
Z104	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
Z105	23107926	Ceramic Video Trap, 6.0MHz, TCF1012
Z601	23107744	Filter, TEM1012
Z602	23107744	Filter, TEM1012
ZP30	23144599	Protector, 125V, 0.63A
ZP80	23144539	Protector, 125V, 2A
ZT01	23153736	Ceramic Resonator, TCR1025
PC BOARD ASSEMBLIES		
✻ U902A	23781699	Signal Board, PB7978A-1 (1480TB/1480TBW)
✻ U902A	23781699	Signal Board, PB7978G-1 (1480RB/1480RBW)
✻ U902B	23781701	CRT Drive Board, PB7978A-2 (1480TB/1480TBW)
✻ U902B	23781701	CRT Drive Board, PB798G-2 (1480RB/1480RBW)
PICTURE TUBE		
⚠V901	23312582	Picture Tube, A34EAC01X65
TUNER		
H001	23321205	Tuner, UF813BX1
ACCESSORIES		
K902	23306084	Remote Hand Unit, CT-9784 (1480TB/TBW)
AT03	23305743	Battery Cover
Y101	23563313	Owner's Manual, English, 1480TB/1480TBW
Y101	23563314	Owner's Manual, English, 1480RB/1480RBW
Y125	23323039	Loop Aerial

Location No.	Part No.	Description
CABINET PARTS		
A201	23410259	Front Cover (1480TB)
A201	23410765	Front Cover (1480TBW)
A201	23410303	Front Cover (1480RB)
A201	23410763	Front Cover (1480RBW)
A218	23421601	Rail, L
A231	23443832	Button, Power (1480TB)
⚠A401	23425821	Back Cover (1480TB/RB)
⚠A401	23426722	Back Cover (1480TBW/RBW)
A411	23560988	Label, Model No. (1480TB/TBW)
A411	23560989	Label, Model No. (1480RB/RBW)
A501	23030187	Screw, CRT5X30
A701	23525589	Case
A702	23935266	Packing, Bottom
A703	23935267	Packing, Top

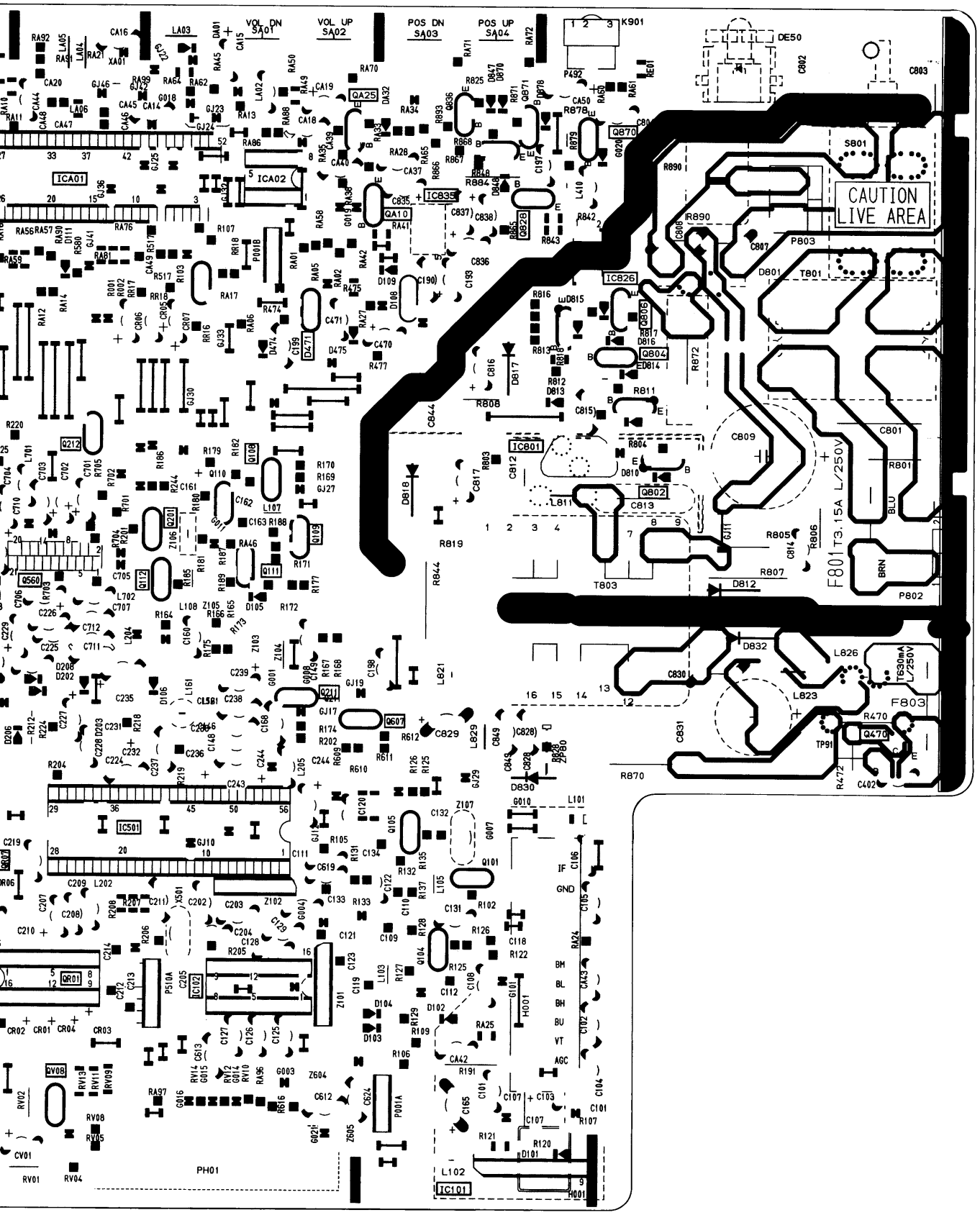
MAIN BOARD PB7978A-1

BOTTOM (FOIL) SIDE



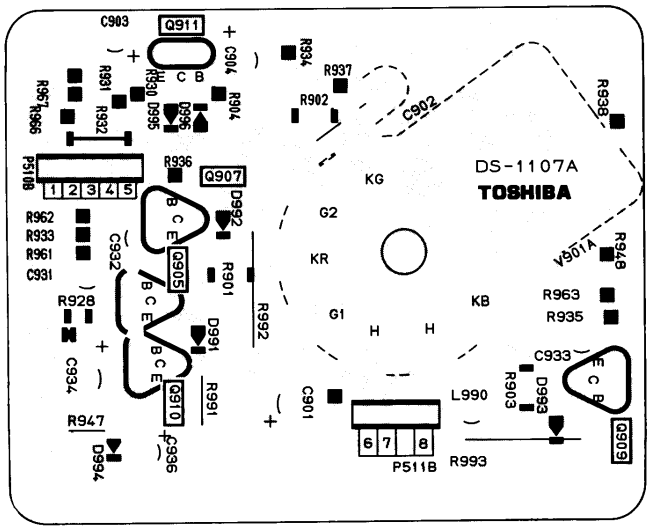
MAIN BOARD PB7978A-1

BOTTOM (FOIL) SIDE



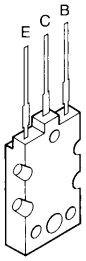
CRT/D BOARD PB7978A-2

BOTTOM (FOIL) SIDE

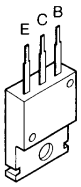


TERMINAL VIEW OF TRANSISTORS

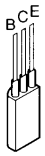
① 2SD2253
(old)
2SC5243



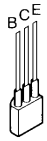
② 2SC3852
2SD1763A
2SC1569
2SC4544
2SA1788
2SA1306
2SA1186A



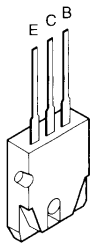
③ 2SC752GTM
2SC2482
2SC2655
2SC4721P



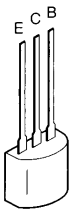
④ 2SC752
2SA562TM
2SA1015
2SC1815
2SC2878
2SC1740S
2SC2120
2SA9335



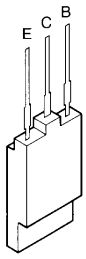
⑤ 2SA1788



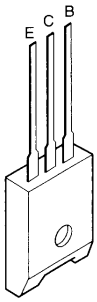
⑥ RN2203
RN2201
RN2004
RN1203
RN1204
RN2204
RN1205
RN1202
RN1201



⑦ 2SD1554
2SD2253
2SD1556
2SC5143



⑧ ON4409



SPECIFICATIONS (Representative : 1480TB)	
Input Power Rating:	53 watts(Approx), AC 220~240 volts, 50 Hz
Aerial Input Inpedanse:	75 ohm unbalanced type for UHF
Receving Channels:	PAL-I Standard:
	UHF ..... channels 21 to 69
Intermediate Frequencies:	Picture I-F carrier frequency ..... 39.5 MHz
	Sound I-F carrier frequency ..... 33.5 MHz
	Colour sub-carrier frequency ..... 35.07 MHz
Picture Tube	14 inches, 340 mm (measured on diagonal of viewable picture area), 90° deflection
Sound Output:	1.5 watts (at 10% harmonic distortion) x 1
Speakers:	77mm round 1 pc
Dimensions:	Height ..... 366 mm
	Width ..... 400 mm
	Depth ..... 378 mm
Mass:	9.2 kg

Specifications are subject to change without notice.

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-01, JAPAN

SCHEMATIC DIAGRAM MODEL : 1480TB / 1480TBW (1/2)

030-9803 1480RB / 1480RBW

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 3. Do not degrade the safety of the receiver through improper servicing.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary ±20%.
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken using a standard colour bar signal.
4. Make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

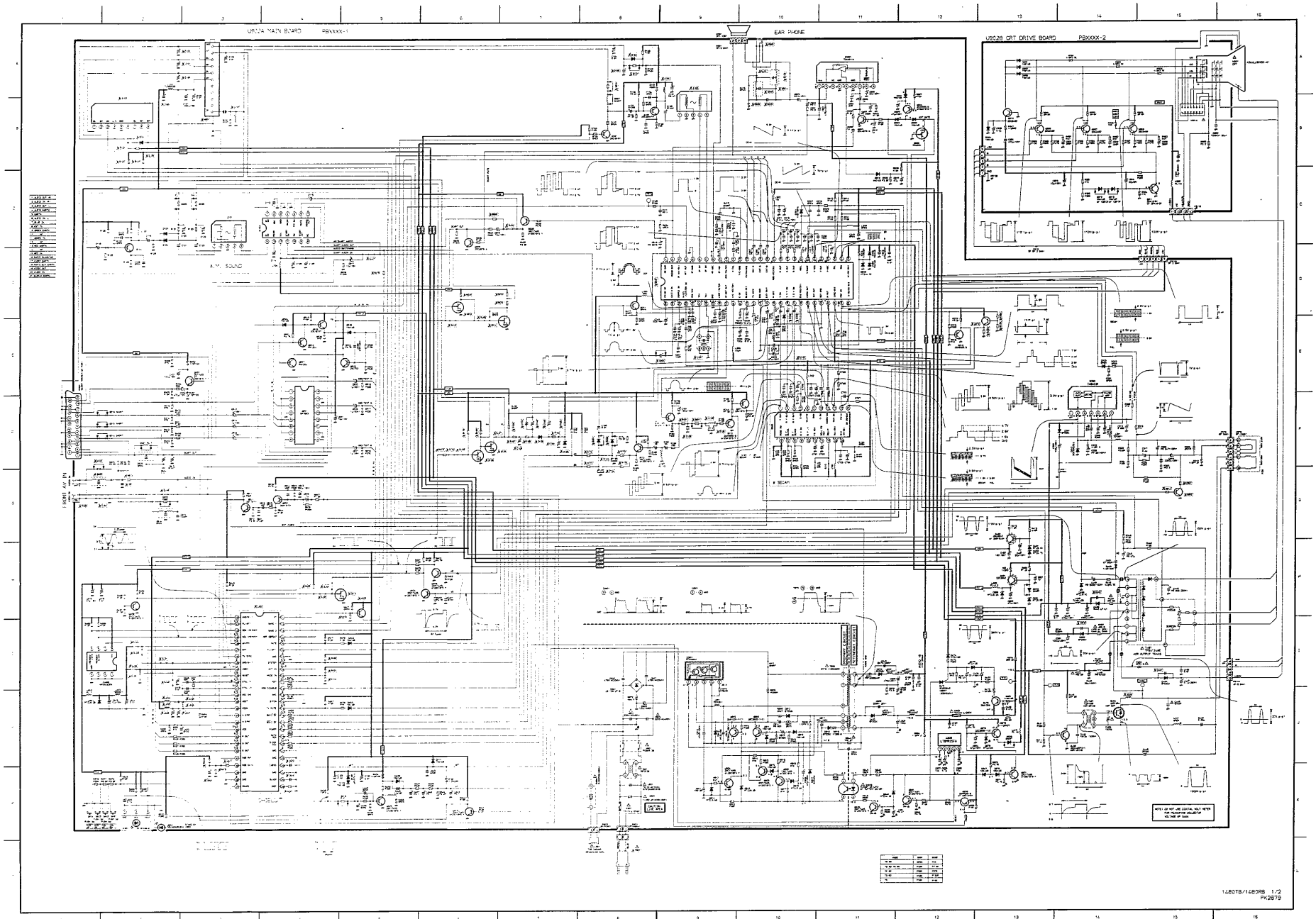
NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ⬬ : Solder links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.



SCHEMATIC DIAGRAM MODEL : 1480TB / 1480TBW (1/2)

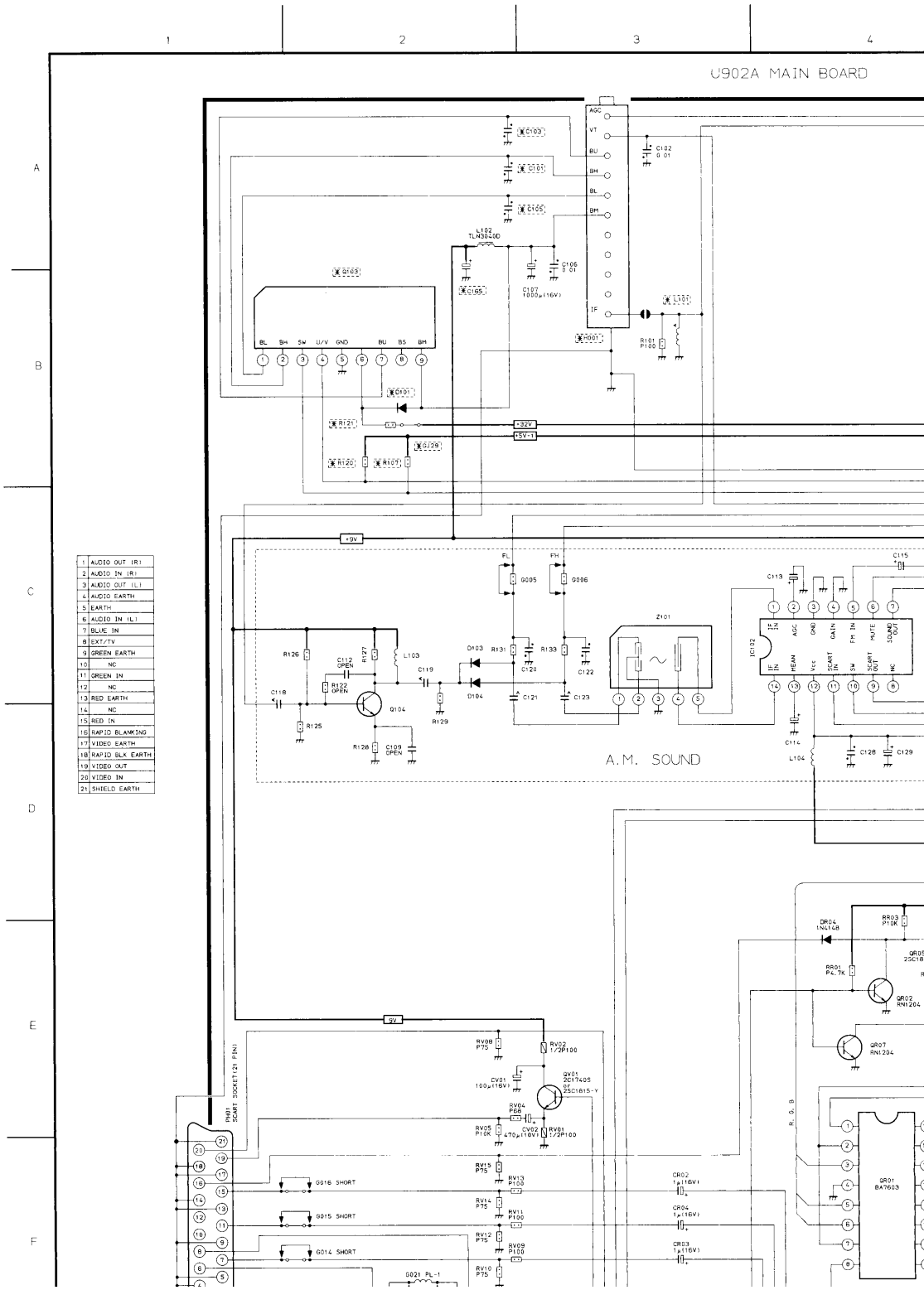
030-9803

1480RB / 1480RBW

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 3. Do not degrade the safety of the receiver through improper servicing.

OBSERVATIO

1. Voltages re volts, colou
2. All wavefo
3. Waveforms
4. Make sure BRIGHTNE picture.



(1/2)

al to
l
page

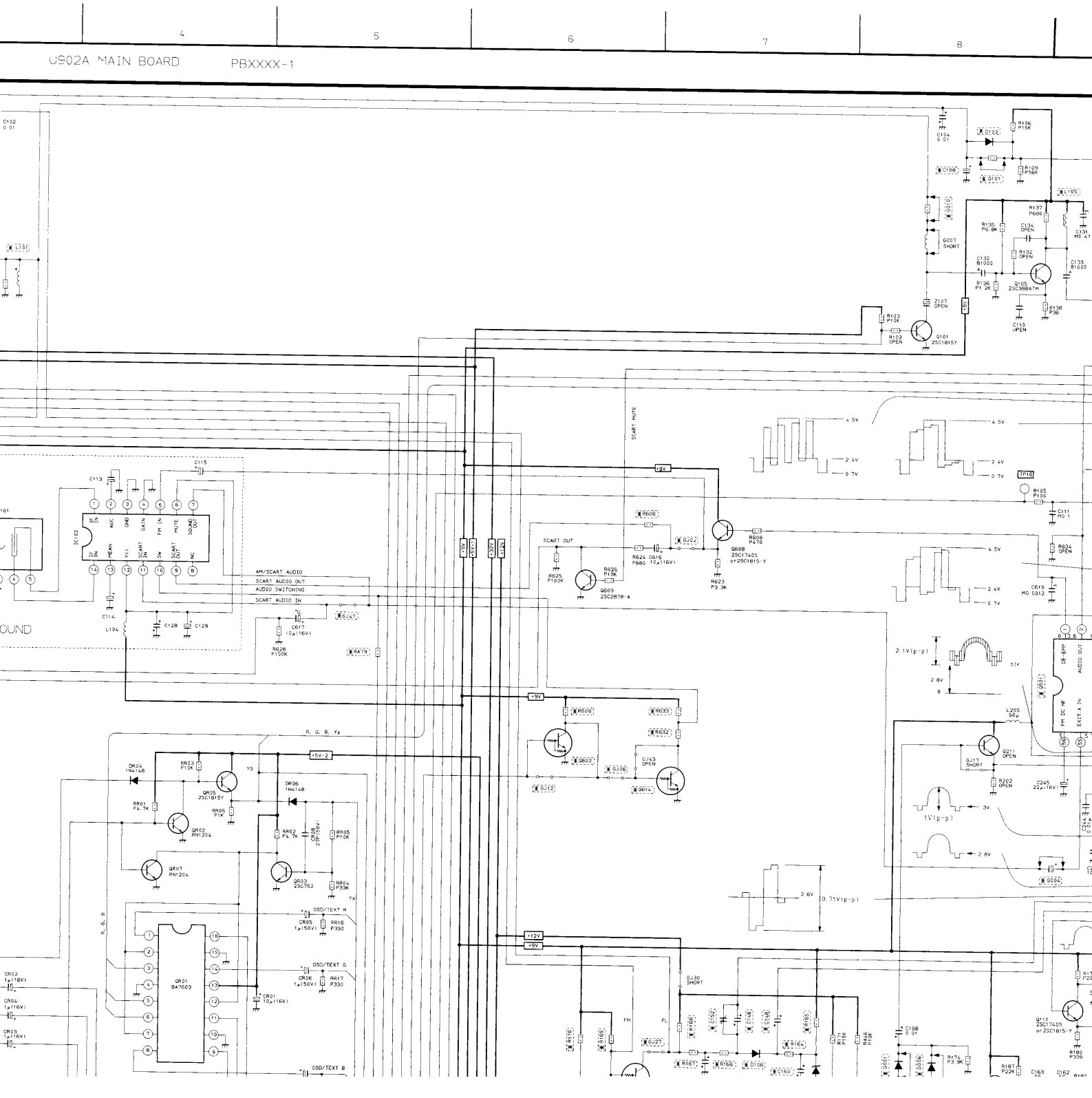
OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary ±20%.
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken using a standard colour bar signal.
4. Make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

NOTES:

1. D.C. resistance value o
   gram. These are measur
2. The circuits are subject
3. ● : Solder links.

US02A MAIN BOARD PBXXXX-1

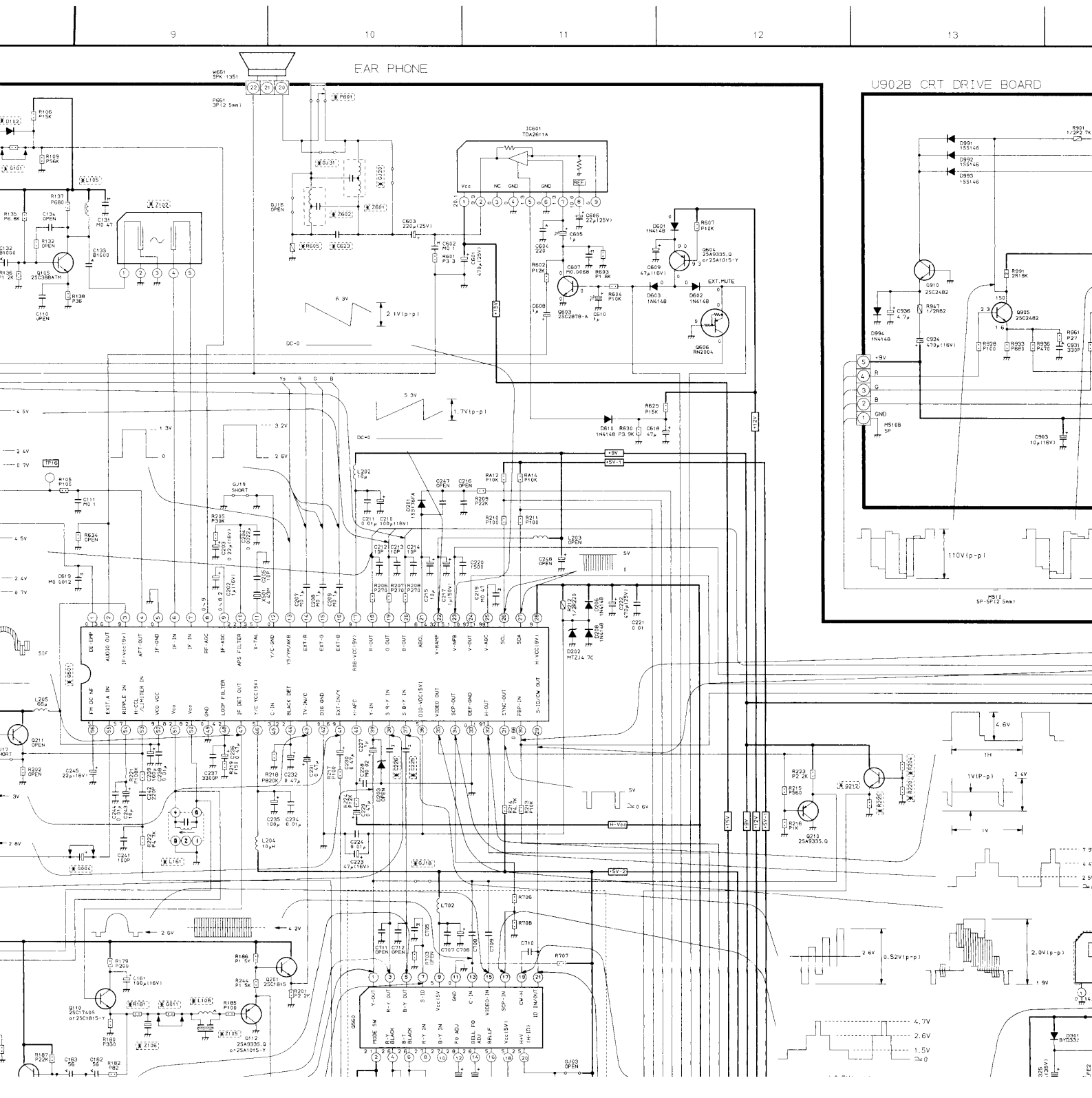


istance value of a principal transformer is shown in this schematic dia-
hese are measured for separated from the circuit.
uits are subject to change without notice.
older links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

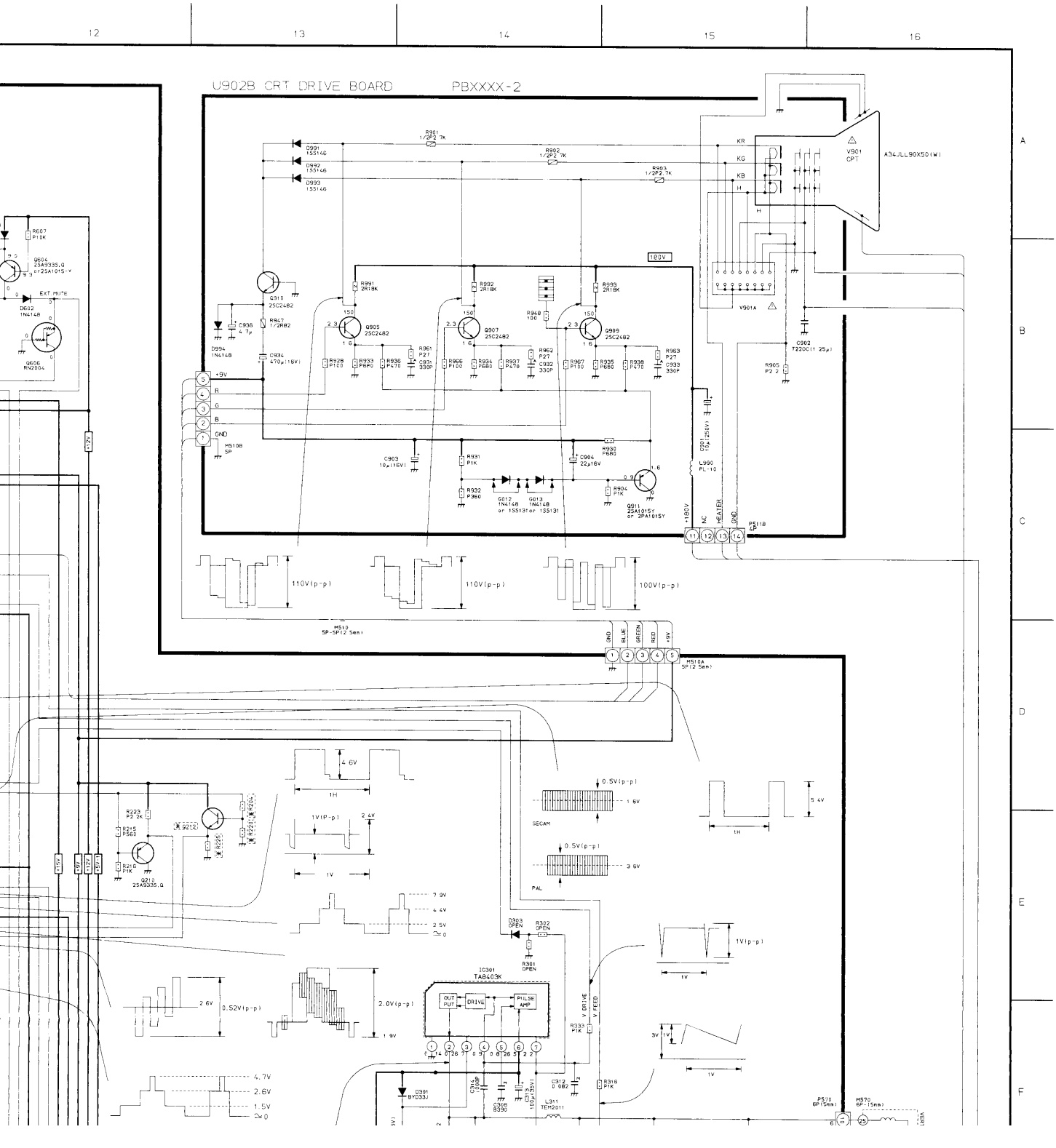
1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor valu
   sed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor value
   sed in μH, and the values less than 1 in H.

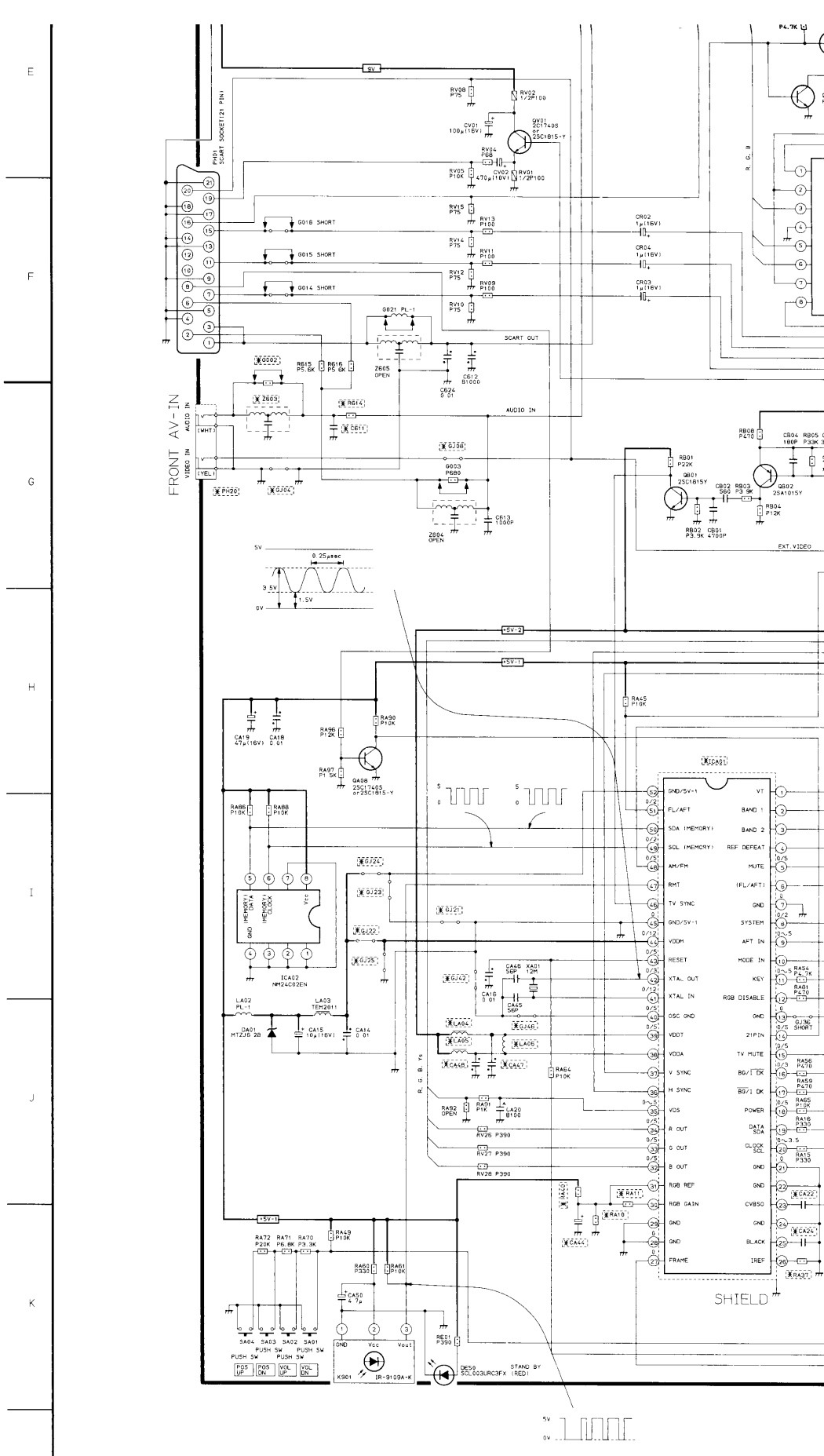


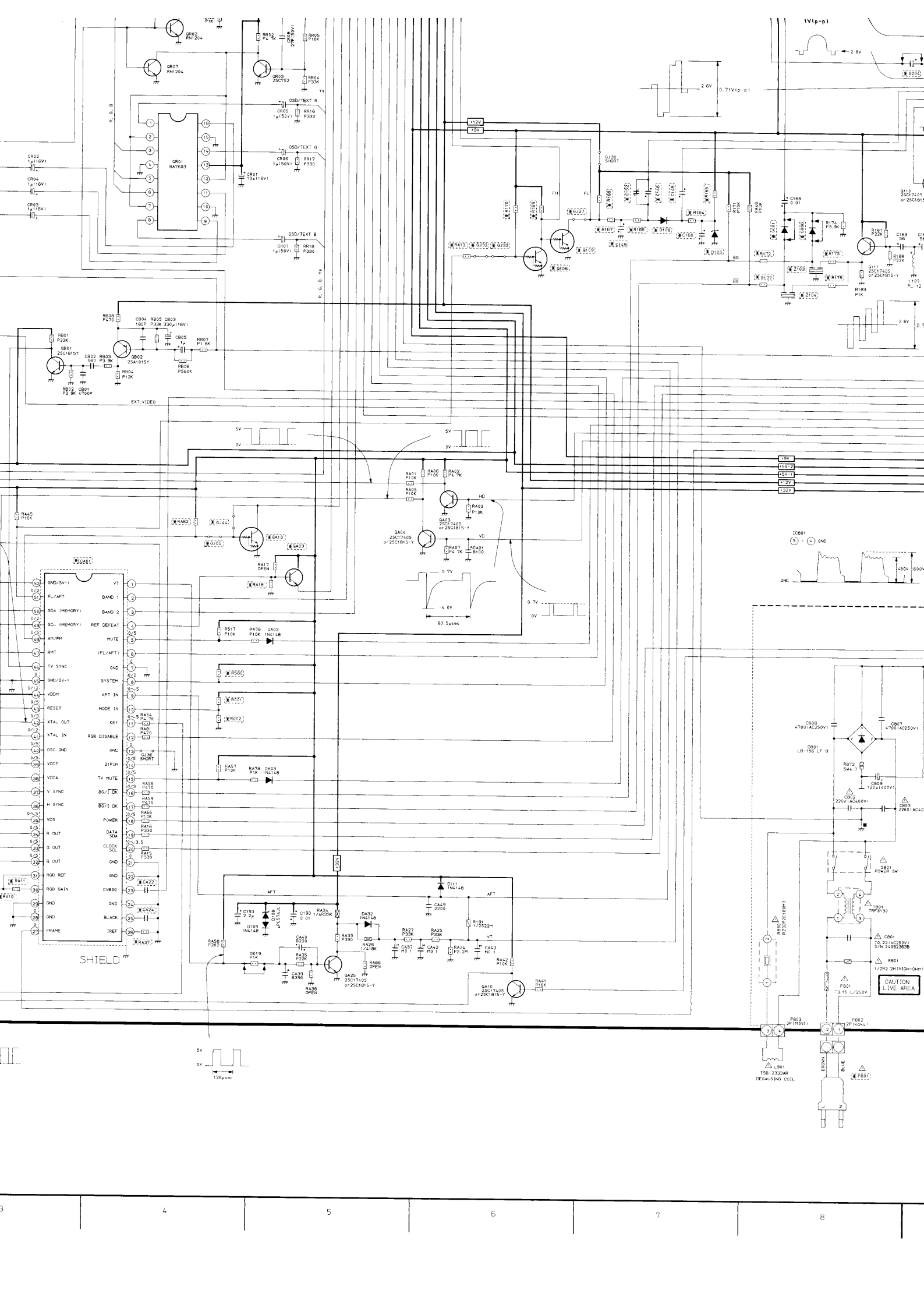
EXPRESSION

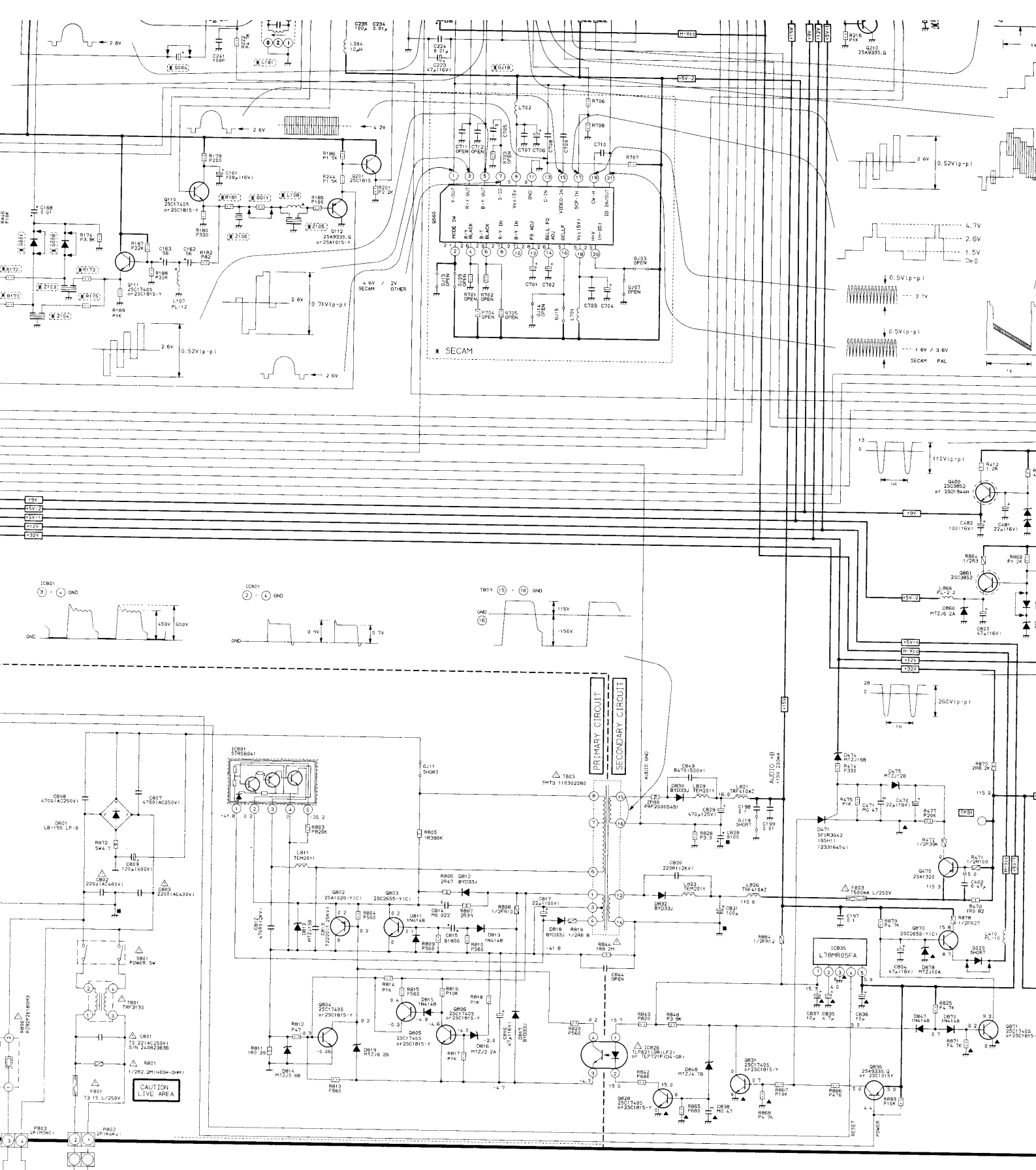
VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

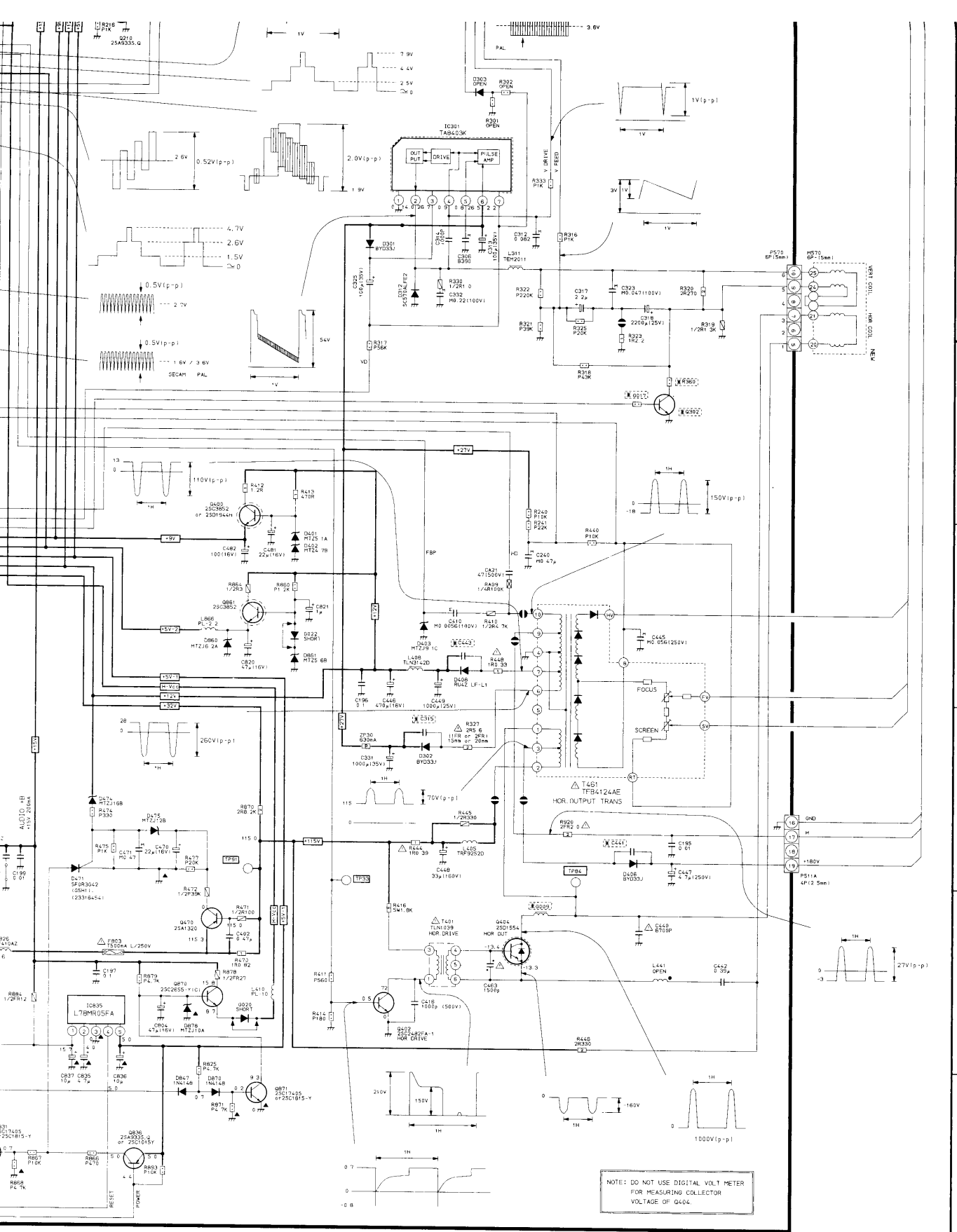



FRONT AV-IN
AUDIO IN
VIDEO IN
SCART OUT
AUDIO IN
EXT.VIDEO
SHIELD
STAND BY (RED)
IR-9109A-K
+5V-1
+5V-2
PUSH SW
POS UP
POS DN
VOL UP
VOL DN
GND
Vcc
Vout
MEMORY DATA
MEMORY CLOCK
ICA02 NM24C02EN
0.25μsec
3.5V
1.5V
5V
0V


IC A01
SHIELD
EXT. VIDEO
GND/5V-1
FL/AFT
SDA (MEMORY)
SCL (MEMORY)
AM/FM
RMT
TV SYNC
GND/5V-1
VDDM
RESET
XTAL OUT
XTAL IN
OSC GND
VDDT
VDDA
V SYNC
H SYNC
VDS
R OUT
G OUT
B OUT
RGB REF
RGB GAIN
GND
GND
FRAME
VT
BAND 1
BAND 2
REF DEFEAT
MUTE
(FL/AFT)
GND
SYSTEM
AFT IN
MODE IN
KEY
RGB DISABLE
GND
21PIN
TV MUTE
BG/I DK
BG/I DK
POWER
DATA SDA
CLOCK SCL
GND
GND
CVBSO
GND
BLACK
TREF
OSD/TEXT R
OSD/TEXT G
OSD/TEXT B
R, G, B
QR01 BA7603
+12V
+9V
+5V
+5V-2
+5V-1
+12V
+32V
FH
FL
HD
VD
AFT
BG
1VP-P
2.6V
0.71VP-P
2.8V
5V
0V
0.7V
-4.0V
63.5μsec
120μsec
450V
600V
GND
CAUTION
LIVE AREA
BROWN
BLUE
T58-2333AR
DEGAUSSING COIL



MODE	R001	R002
TB RB	OPEN	P1K
TD RD TN RN	P33K	P7.5K
TF RF	P33K	P27K
TS RS	P33K	P150K
TR	P33K	P15K



	R001	R002
	OPEN	P1K
	P33K	P3.5K
	P33K	P27K
	P33K	P150K
	P33K	P15K

1480TB/1480RB 1/2
PK2679

SCHEMATIC DIAGRAM MODEL : 1480TB / 1480TBW (2/2)
1480RB / 1480RBW
030-9803

CAUTION: The international hazard symbols ⚠ in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 3. Do not degrade the safety of the receiver through improper servicing.

OBSERVATION OF VOLTAGES AND WAVEFORMS
1. Voltages are taken with a VOM between chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary ±20%.
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken under colour bar signal.
4. Make sure that CONTRAST is set to COLOUR position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

NOTES:
1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ● : Solder mark.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR
1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless other wise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

SCHEMATIC DIAGRAM MODEL : 1480TB / 1480TBW (2/2)

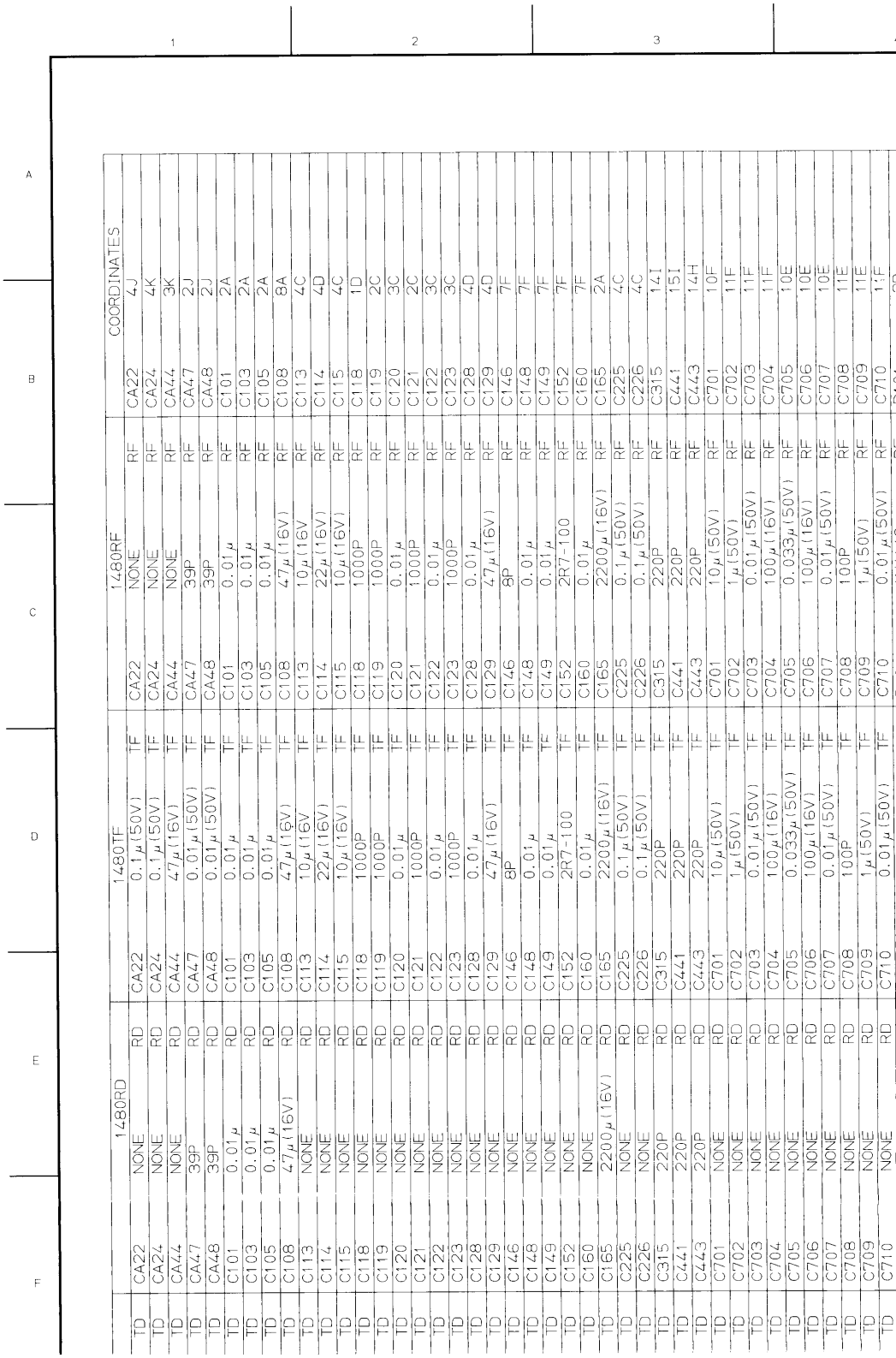
1480RB / 1480RBW

030-9803

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 3. Do not degrade the safety of the receiver through improper servicing.

OBSER

1. Volta volts
2. All w
3. Wav
4. Mak BRIG pictu



	1480RD		1480TF		1480RF		COORDINATES
TD	CA22	NONE	RD	CA22	0.1μ(50V)	TF	CA22	NONE	RF	CA22	4J
TD	CA24	NONE	RD	CA24	0.1μ(50V)	TF	CA24	NONE	RF	CA24	4K
TD	CA44	NONE	RD	CA44	47μ(16V)	TF	CA44	NONE	RF	CA44	3K
TD	CA47	39P	RD	CA47	0.01μ(50V)	TF	CA47	39P	RF	CA47	2J
TD	CA48	39P	RD	CA48	0.01μ(50V)	TF	CA48	39P	RF	CA48	2J
TD	C101	0.01μ	RD	C101	0.01μ	TF	C101	0.01μ	RF	C101	2A
TD	C103	0.01μ	RD	C103	0.01μ	TF	C103	0.01μ	RF	C103	2A
TD	C105	0.01μ	RD	C105	0.01μ	TF	C105	0.01μ	RF	C105	2A
TD	C108	47μ(16V)	RD	C108	47μ(16V)	TF	C108	47μ(16V)	RF	C108	8A
TD	C113	NONE	RD	C113	10μ(16V	TF	C113	10μ(16V	RF	C113	4C
TD	C114	NONE	RD	C114	22μ(16V)	TF	C114	22μ(16V)	RF	C114	4D
TD	C115	NONE	RD	C115	10μ(16V)	TF	C115	10μ(16V)	RF	C115	4C
TD	C118	NONE	RD	C118	1000P	TF	C118	1000P	RF	C118	1D
TD	C119	NONE	RD	C119	1000P	TF	C119	1000P	RF	C119	2C
TD	C120	NONE	RD	C120	0.01μ	TF	C120	0.01μ	RF	C120	3C
TD	C121	NONE	RD	C121	1000P	TF	C121	1000P	RF	C121	2C
TD	C122	NONE	RD	C122	0.01μ	TF	C122	0.01μ	RF	C122	3C
TD	C123	NONE	RD	C123	1000P	TF	C123	1000P	RF	C123	3C
TD	C128	NONE	RD	C128	0.01μ	TF	C128	0.01μ	RF	C128	4D
TD	C129	NONE	RD	C129	47μ(16V)	TF	C129	47μ(16V)	RF	C129	4D
TD	C146	NONE	RD	C146	8P	TF	C146	8P	RF	C146	7F
TD	C148	NONE	RD	C148	0.01μ	TF	C148	0.01μ	RF	C148	7F
TD	C149	NONE	RD	C149	0.01μ	TF	C149	0.01μ	RF	C149	7F
TD	C152	NONE	RD	C152	2R7-100	TF	C152	2R7-100	RF	C152	7F
TD	C160	NONE	RD	C160	0.01μ	TF	C160	0.01μ	RF	C160	7F
TD	C165	2200μ(16V)	RD	C165	2200μ(16V)	TF	C165	2200μ(16V)	RF	C165	2A
TD	C225	NONE	RD	C225	0.1μ(50V)	TF	C225	0.1μ(50V)	RF	C225	4C
TD	C226	NONE	RD	C226	0.1μ(50V)	TF	C226	0.1μ(50V)	RF	C226	4C
TD	C315	220P	RD	C315	220P	TF	C315	220P	RF	C315	14I
TD	C441	220P	RD	C441	220P	TF	C441	220P	RF	C441	15I
TD	C443	220P	RD	C443	220P	TF	C443	220P	RF	C443	14H
TD	C701	NONE	RD	C701	10μ(50V)	TF	C701	10μ(50V)	RF	C701	10F
TD	C702	NONE	RD	C702	1μ(50V)	TF	C702	1μ(50V)	RF	C702	11F
TD	C703	NONE	RD	C703	0.01μ(50V)	TF	C703	0.01μ(50V)	RF	C703	11F
TD	C704	NONE	RD	C704	100μ(16V)	TF	C704	100μ(16V)	RF	C704	11F
TD	C705	NONE	RD	C705	0.033μ(50V)	TF	C705	0.033μ(50V)	RF	C705	10E
TD	C706	NONE	RD	C706	100μ(16V)	TF	C706	100μ(16V)	RF	C706	10E
TD	C707	NONE	RD	C707	0.01μ(50V)	TF	C707	0.01μ(50V)	RF	C707	10E
TD	C708	NONE	RD	C708	100P	TF	C708	100P	RF	C708	11E
TD	C709	NONE	RD	C709	1μ(50V)	TF	C709	1μ(50V)	RF	C709	11E
TD	C710	NONE	RD	C710	0.01μ(50V)	TF	C710	0.01μ(50V)	RF	C710	11F

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OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary ±20%.
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken using a standard colour bar signal.
4. Make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

NOTES:

1. D.C. resistance valu
gram. These are me
2. The circuits are subj
3. ● : Solder links.

| | | |

NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ⬬ : Solder links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR a

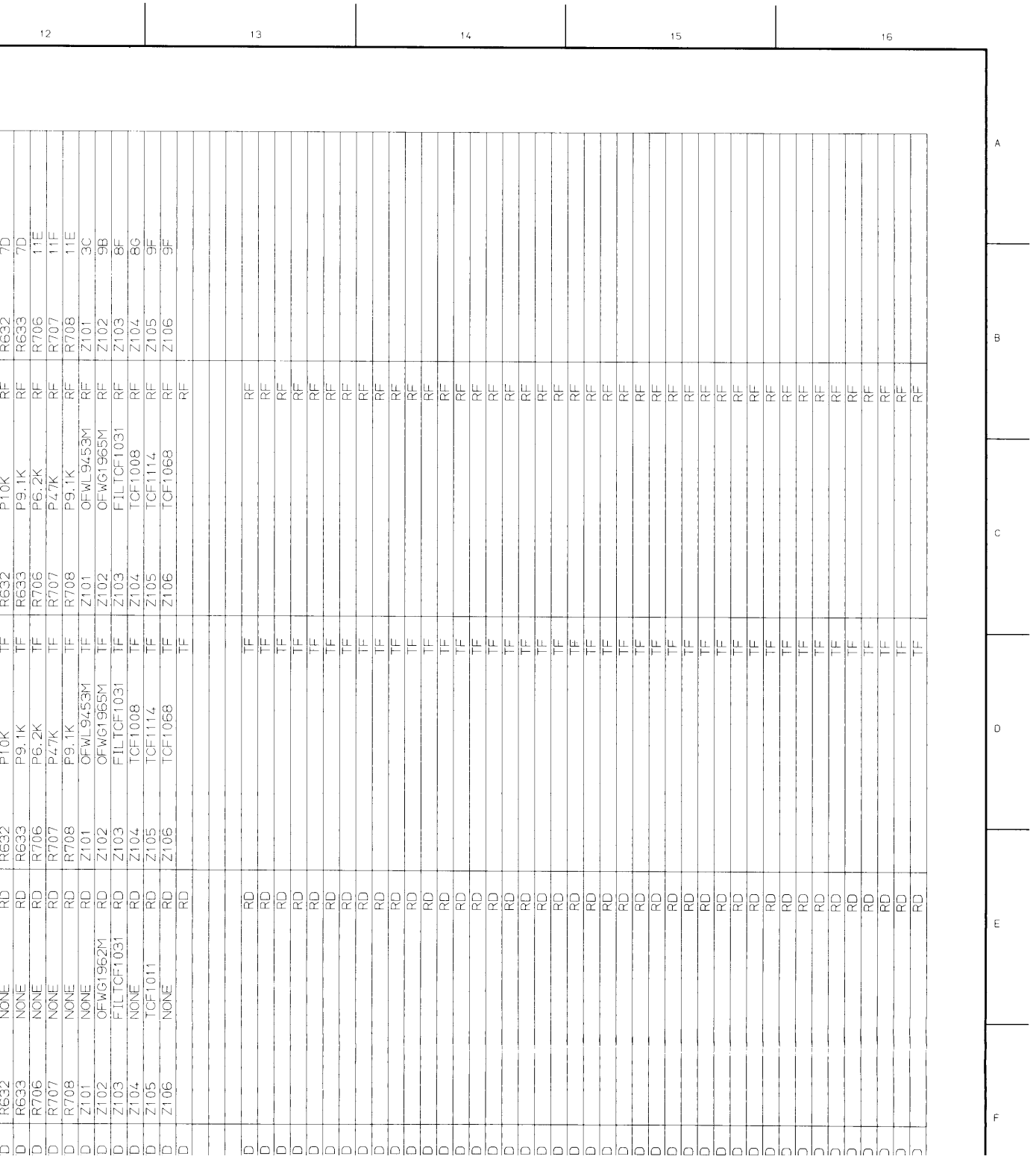
1. Resistance is shown in ohm, k=1,000, M
2. Unless other wise noted in schematic, sed in μF and the values more than 1 in
3. Unless otherwise noted in schematic, a sed in μH, and the values less than 1 in

| | | |

RESSION

UE OF RESISTOR, CAPACITOR and INDUCTOR

sistance is shown in ohm, k=1,000, M=1,000,000
less other wise noted in schematic, all capacitor values less than 1 are expres-
in μF and the values more than 1 in pF.
less otherwise noted in schematic, all inductor values more than 1 are expres-
in μH, and the values less than 1 in H.



LOCATION	1480TB/W			1480RB/W			1480TD			1480RD		
CA22	CA22	0.1μ(50V)	TB	CA22	NONE	RB	CA22	0.1μ(50V)	TD	CA22	NONE	RD
CA24	CA24	0.1μ(50V)	TB	CA24	NONE	RB	CA24	0.1μ(50V)	TD	CA24	NONE	RD
CA44	CA44	47μ(16V)	TB	CA44	NONE	RB	CA44	47μ(16V)	TD	CA44	NONE	RD
CA47	CA47	0.01μ(50V)	TB	CA47	39P	RB	CA47	0.01μ(50V)	TD	CA47	39P	RD
CA48	CA48	0.01μ(50V)	TB	CA48	39P	RB	CA48	0.01μ(50V)	TD	CA48	39P	RD
C101	C101	NONE	TB	C101	NONE	RB	C101	0.01μ	TD	C101	0.01μ	RD
C103	C103	NONE	TB	C103	NONE	RB	C103	0.01μ	TD	C103	0.01μ	RD
C105	C105	NONE	TB	C105	NONE	RB	C105	0.01μ	TD	C105	0.01μ	RD
C108	C108	47μ(16V)	TB	C108	47μ(16V)	RB	C108	47μ(16V)	TD	C108	47μ(16V)	RD
C113	C113	NONE	TB	C113	NONE	RB	C113	NONE	TD	C113	NONE	RD
C114	C114	NONE	TB	C114	NONE	RB	C114	NONE	TD	C114	NONE	RD
C115	C115	NONE	TB	C115	NONE	RB	C115	NONE	TD	C115	NONE	RD
C118	C118	NONE	TB	C118	NONE	RB	C118	NONE	TD	C118	NONE	RD
C119	C119	NONE	TB	C119	NONE	RB	C119	NONE	TD	C119	NONE	RD
C120	C120	NONE	TB	C120	NONE	RB	C120	NONE	TD	C120	NONE	RD
C121	C121	NONE	TB	C121	NONE	RB	C121	NONE	TD	C121	NONE	RD
C122	C122	NONE	TB	C122	NONE	RB	C122	NONE	TD	C122	NONE	RD
C123	C123	NONE	TB	C123	NONE	RB	C123	NONE	TD	C123	NONE	RD
C128	C128	NONE	TB	C128	NONE	RB	C128	NONE	TD	C128	NONE	RD
C129	C129	NONE	TB	C129	NONE	RB	C129	NONE	TD	C129	NONE	RD
C146	C146	NONE	TB	C146	NONE	RB	C146	NONE	TD	C146	NONE	RD
C148	C148	NONE	TB	C148	NONE	RB	C148	NONE	TD	C148	NONE	RD
C149	C149	NONE	TB	C149	NONE	RB	C149	NONE	TD	C149	NONE	RD
C152	C152	NONE	TB	C152	NONE	RB	C152	NONE	TD	C152	NONE	RD
C160	C160	NONE	TB	C160	NONE	RB	C160	NONE	TD	C160	NONE	RD
C165	C165	NONE	TB	C165	NONE	RB	C165	2200μ(16V)	TD	C165	2200μ(16V)	RD
C225	C225	NONE	TB	C225	NONE	RB	C225	NONE	TD	C225	NONE	RD
C226	C226	NONE	TB	C226	NONE	RB	C226	NONE	TD	C226	NONE	RD
C315	C315	NONE	TB	C315	NONE	RB	C315	220P	TD	C315	220P	RD
C441	C441	NONE	TB	C441	NONE	RB	C441	220P	TD	C441	220P	RD
C443	C443	NONE	TB	C443	NONE	RB	C443	220P	TD	C443	220P	RD
C701	C701	NONE	TB	C701	NONE	RB	C701	NONE	TD	C701	NONE	RD
C702	C702	NONE	TB	C702	NONE	RB	C702	NONE	TD	C702	NONE	RD
C703	C703	NONE	TB	C703	NONE	RB	C703	NONE	TD	C703	NONE	RD
C704	C704	NONE	TB	C704	NONE	RB	C704	NONE	TD	C704	NONE	RD
C705	C705	NONE	TB	C705	NONE	RB	C705	NONE	TD	C705	NONE	RD
C706	C706	NONE	TB	C706	NONE	RB	C706	NONE	TD	C706	NONE	RD
C707	C707	NONE	TB	C707	NONE	RB	C707	NONE	TD	C707	NONE	RD
C708	C708	NONE	TB	C708	NONE	RB	C708	NONE	TD	C708	NONE	RD
C709	C709	NONE	TB	C709	NONE	RB	C709	NONE	TD	C709	NONE	RD
C710	C710	NONE	TB	C710	NONE	RB	C710	NONE	TD	C710	NONE	RD
D101	D101	NONE	TB	D101	NONE	RB	D101	1N4148	TD	D101	1N4148	RD

C225	C225	NONE	TB	C225	NONE	RB	C225	NONE	TD	C225	NONE	RD
C226	C226	NONE	TB	C226	NONE	RB	C226	NONE	TD	C226	NONE	RD
C315	C315	NONE	TB	C315	NONE	RB	C315	220P	TD	C315	220P	RD
C441	C441	NONE	TB	C441	NONE	RB	C441	220P	TD	C441	220P	RD
C443	C443	NONE	TB	C443	NONE	RB	C443	220P	TD	C443	220P	RD
C701	C701	NONE	TB	C701	NONE	RB	C701	NONE	TD	C701	NONE	RD
C702	C702	NONE	TB	C702	NONE	RB	C702	NONE	TD	C702	NONE	RD
C703	C703	NONE	TB	C703	NONE	RB	C703	NONE	TD	C703	NONE	RD
C704	C704	NONE	TB	C704	NONE	RB	C704	NONE	TD	C704	NONE	RD
C705	C705	NONE	TB	C705	NONE	RB	C705	NONE	TD	C705	NONE	RD
C706	C706	NONE	TB	C706	NONE	RB	C706	NONE	TD	C706	NONE	RD
C707	C707	NONE	TB	C707	NONE	RB	C707	NONE	TD	C707	NONE	RD
C708	C708	NONE	TB	C708	NONE	RB	C708	NONE	TD	C708	NONE	RD
C709	C709	NONE	TB	C709	NONE	RB	C709	NONE	TD	C709	NONE	RD
C710	C710	NONE	TB	C710	NONE	RB	C710	NONE	TD	C710	NONE	RD
D101	D101	NONE	TB	D101	NONE	RB	D101	1N4148	TD	D101	1N4148	RD
D102	D102	NONE	TB	D102	NONE	RB	D102	NONE	TD	D102	NONE	RD
D103	D103	NONE	TB	D103	NONE	RB	D103	NONE	TD	D103	NONE	RD
D104	D104	NONE	TB	D104	NONE	RB	D104	NONE	TD	D104	NONE	RD
D105	D105	NONE	TB	D105	NONE	RB	D105	NONE	TD	D105	NONE	RD
D106	D106	NONE	TB	D106	NONE	RB	D106	NONE	TD	D106	NONE	RD
GJ02	GJ02	SHORT	TB	GJ02	SHORT	RB	GJ02	SHORT	TD	GJ02	SHORT	RD
GJ05	GJ05	NONE	TB	GJ05	NONE	RB	GJ05	NONE	TD	GJ05	NONE	RD
GJ06	GJ06	NONE	TB	GJ06	NONE	RB	GJ06	NONE	TD	GJ06	NONE	RD
GJ12	GJ12	NONE	TB	GJ12	NONE	RB	GJ12	NONE	TD	GJ12	NONE	RD
GJ15	GJ15	NONE	TB	GJ15	NONE	RB	GJ15	NONE	TD	GJ15	NONE	RD
GJ18	GJ18	SHORT	TB	GJ18	SHORT	RB	GJ18	SHORT	TD	GJ18	SHORT	RD
GJ21	GJ21	SHORT	TB	GJ21	NONE	RB	GJ21	SHORT	TD	GJ21	NONE	RD
GJ22	GJ22	SHORT	TB	GJ22	NONE	RB	GJ22	SHORT	TD	GJ22	NONE	RD
GJ23	GJ23	SHORT	TB	GJ23	NONE	RB	GJ23	SHORT	TD	GJ23	NONE	RD
GJ24	GJ24	NONE	TB	GJ24	SHORT	RB	GJ24	NONE	TD	GJ24	SHORT	RD
GJ25	GJ25	NONE	TB	GJ25	SHORT	RB	GJ25	NONE	TD	GJ25	SHORT	RD
GJ27	GJ27	NONE	TB	GJ27	NONE	RB	GJ27	NONE	TD	GJ27	NONE	RD
GJ29	GJ29	NONE	TB	GJ29	NONE	RB	GJ29	SHORT	TD	GJ29	SHORT	RD
GJ32	GJ32	NONE	TB	GJ32	NONE	RB	GJ32	NONE	TD	GJ32	NONE	RD
GJ33	GJ33	NONE	TB	GJ33	NONE	RB	GJ33	NONE	TD	GJ33	NONE	RD
GJ42	GJ42	NONE	TB	GJ42	SHORT	RB	GJ42	NONE	TD	GJ42	SHORT	RD
GJ44	GJ44	NONE	TB	GJ44	NONE	RB	GJ44	NONE	TD	GJ44	NONE	RD
GJ46	GJ46	SHORT	TB	GJ46	NONE	RB	GJ46	SHORT	TD	GJ46	NONE	RD
GJ47	GJ47	SHORT	TB	GJ47	SHORT	RB	GJ47	SHORT	TD	GJ47	SHORT	RD
G001	G001	SHORT	TB	G001	SHORT	RB	G001	NONE	TD	G001	NONE	RD
G004	G004	SHORT	TB	G004	SHORT	RB	G004	SHORT	TD	G004	SHORT	RD
G005	G005	NONE	TB	G005	NONE	RB	G005	NONE	TD	G005	NONE	RD
G006	G006	NONE	TB	G006	NONE	RB	G006	NONE	TD	G006	NONE	RD
G008	G008	NONE	TB	G008	NONE	RB	G008	SHORT	TD	G008	SHORT	RD
G009	G009	SHORT	TB	G009	SHORT	RB	G009	TEM2011	TD	G009	TEM2011	RD
G010	G010	SHORT	TB	G010	SHORT	RB	G010	P68	TD	G010	P68	RD
G011	G011	SHORT	TB	G011	SHORT	RB	G011	P100	TD	G011	P100	RD
G017	G017	P47K	TB	G017	NONE	RB	G017	P47K	TD	G017	NONE	RD
G101	G101	SHORT	TB	G101	SHORT	RB	G101	SHORT	TD	G101	SHORT	RD
H001	H001	TN-UF813BX1	TB	H001	TN-UF813BX1	RB	H001	TN-EGA13X2 EGA	TD	H001	TN-EGA13X2 EGA	RD
IC101	IC101	SAA52902P/084	TB	IC101	P83C055BBP/19	RB	IC101	SAA52902P/084	TD	IC101	P83C055BBP/19	RD
IC102	IC102	NONE	TB	IC102	NONE	RB	IC102	NONE	TD	IC102	NONE	RD
LA04	LA04	TEM2011	TB	LA04	NONE	RB	LA04	TEM2011	TD	LA04	NONE	RD
LA05	LA05	TEM2011	TB	LA05	NONE	RB	LA05	TEM2011	TD	LA05	NONE	RD
LA06	LA06	NONE	TB	LA06	TRF4330AJ	RB	LA06	NONE	TD	LA06	TRF4330AJ	RD
L101	L101	TRF4R47AJ	TB	L101	TRF4R47AJ	RB	L101	TRF4R68AJ	TD	L101	TRF4R68AJ	RD
L103	L103	NONE	TB	L103	NONE	RB	L103	NONE	TD	L103	NONE	RD
L104	L104	NONE	TB	L104	NONE	RB	L104	NONE	TD	L104	NONE	RD
L105	L105	TRF9221	TB	L105	TRF9221	RB	L105	TRF9220	TD	L105	TRF9220	RD
L108	L108	TRF41004J	TB	L108	TRF41004J	RB	L108	TRF41004J	TD	L108	TRF41004J	RD
L161	L161	TRF1239AV	TB	L161	TRF1239AV	RB	L161	TRF1239AV	TD	L161	TRF1239AV	RD
L701	L701	NONE	TB	L701	NONE	RB	L701	NONE	TD	L701	NONE	RD
L702	L702	NONE	TB	L702	NONE	RB	L702	NONE	TD	L702	NONE	RD
P801	P801	POWER CORD	TB	P801	POWER CORD	RB	P801	POWER CORD	TD	P801	POWER CORD	RD
QA09	QA09	NONE	TB	QA09	NONE	RB	QA09	NONE	TD	QA09	NONE	RD
QA13	QA13	NONE	TB	QA13	NONE	RB	QA13	NONE	TD	QA13	NONE	RD
Q103	Q103	NONE	TB	Q103	NONE	RB	Q103	LA7910	TD	Q103	LA7910	RD
Q104	Q104	NONE	TB	Q104	NONE	RB	Q104	NONE	TD	Q104	NONE	RD
Q108	Q108	NONE	TB	Q108	NONE	RB	Q108	NONE	TD	Q108	NONE	RD
Q109	Q109	NONE	TB	Q109	NONE	RB	Q109	NONE	TD	Q109	NONE	RD
Q212	Q212	2SC1815-Y	TB	Q212	NONE	RB	Q212	2SC1815-Y	TD	Q212	NONE	RD
Q303	Q303	2SC1815-Y	TB	Q303	NONE	RB	Q303	2SC1815-Y	TD	Q303	NONE	RD

L702	L702	NONE	TB	L702	NONE	RB	L702	NONE	TD	L702	NONE	RD
P801	P801	POWER CORD	TB	P801	POWER CORD	RB	P801	POWER CORD	TD	P801	POWER CORD	RD
QA09	QA09	NONE	TB	QA09	NONE	RB	QA09	NONE	TD	QA09	NONE	RD
QA13	QA13	NONE	TB	QA13	NONE	RB	QA13	NONE	TD	QA13	NONE	RD
Q103	Q103	NONE	TB	Q103	NONE	RB	Q103	LA7910	TD	Q103	LA7910	RD
Q104	Q104	NONE	TB	Q104	NONE	RB	Q104	NONE	TD	Q104	NONE	RD
Q108	Q108	NONE	TB	Q108	NONE	RB	Q108	NONE	TD	Q108	NONE	RD
Q109	Q109	NONE	TB	Q109	NONE	RB	Q109	NONE	TD	Q109	NONE	RD
Q212	Q212	2SC1815-Y	TB	Q212	NONE	RB	Q212	2SC1815-Y	TD	Q212	NONE	RD
Q302	Q302	2SC1815-Y	TB	Q302	NONE	RB	Q302	2SC1815-Y	TD	Q302	NONE	RD
Q501	Q501	TB1231N	TB	Q501	TB1231N	RB	Q501	TB1231N	TD	Q501	TB1231N	RD
Q560	Q560	NONE	TB	Q560	NONE	RB	Q560	NONE	TD	Q560	NONE	RD
Q602	Q602	NONE	TB	Q602	NONE	RB	Q602	NONE	TD	Q602	NONE	RD
Q614	Q614	NONE	TB	Q614	NONE	RB	Q614	NONE	TD	Q614	NONE	RD
RA10	RA10	P1K	TB	RA10	NONE	RB	RA10	P1K	TD	RA10	NONE	RD
RA11	RA11	P1.8K	TB	RA11	NONE	RB	RA11	P1.8K	TD	RA11	NONE	RD
RA13	RA13	NONE	TB	RA13	NONE	RB	RA13	NONE	TD	RA13	NONE	RD
RA18	RA18	NONE	TB	RA18	NONE	RB	RA18	NONE	TD	RA18	NONE	RD
RA37	RA37	P27K	TB	RA37	NONE	RB	RA37	P27K	TD	RA37	NONE	RD
RA40	RA40	P1K	TB	RA40	NONE	RB	RA40	P1K	TD	RA40	NONE	RD
RA62	RA62	P22K	TB	RA62	P22K	RB	RA62	P22K	TD	RA62	P22K	RD
RA79	RA79	NONE	TB	RA79	NONE	RB	RA79	NONE	TD	RA79	NONE	RD
R001	R001	NONE	TB	R001	NONE	RB	R001	P33K	TD	R001	P33K	RD
R002	R002	P1K	TB	R002	P1K	RB	R002	P7.5K	TD	R002	P7.5K	RD
R107	R107	NONE	TB	R107	NONE	RB	R107	P1K	TD	R107	P1K	RD
R120	R120	NONE	TB	R120	NONE	RB	R120	P1K	TD	R120	P1K	RD
R121	R121	NONE	TB	R121	NONE	RB	R121	P3.9K	TD	R121	P3.9K	RD
R125	R125	NONE	TB	R125	NONE	RB	R125	NONE	TD	R125	NONE	RD
R126	R126	NONE	TB	R126	NONE	RB	R126	NONE	TD	R126	NONE	RD
R127	R127	NONE	TB	R127	NONE	RB	R127	NONE	TD	R127	NONE	RD
R128	R128	NONE	TB	R128	NONE	RB	R128	NONE	TD	R128	NONE	RD
R129	R129	NONE	TB	R129	NONE	RB	R129	NONE	TD	R129	NONE	RD
R131	R131	NONE	TB	R131	NONE	RB	R131	NONE	TD	R131	NONE	RD
R133	R133	NONE	TB	R133	NONE	RB	R133	NONE	TD	R133	NONE	RD
R164	R164	NONE	TB	R164	NONE	RB	R164	NONE	TD	R164	NONE	RD
R165	R165	NONE	TB	R165	NONE	RB	R165	NONE	TD	R165	NONE	RD
R166	R166	NONE	TB	R166	NONE	RB	R166	NONE	TD	R166	NONE	RD
R167	R167	NONE	TB	R167	NONE	RB	R167	NONE	TD	R167	NONE	RD
R168	R168	NONE	TB	R168	NONE	RB	R168	NONE	TD	R168	NONE	RD
R169	R169	NONE	TB	R169	NONE	RB	R169	NONE	TD	R169	NONE	RD
R170	R170	NONE	TB	R170	NONE	RB	R170	NONE	TD	R170	NONE	RD
R172	R172	NONE	TB	R172	NONE	RB	R172	NONE	TD	R172	NONE	RD
R173	R173	NONE	TB	R173	NONE	RB	R173	P270	TD	R173	P270	RD
R175	R175	P470	TB	R175	P470	RB	R175	NONE	TD	R175	NONE	RD
R177	R177	NONE	TB	R177	NONE	RB	R177	NONE	TD	R177	NONE	RD
R181	R181	P220	TB	R181	P220	RB	R181	P56	TD	R181	P56	RD
R204	R204	P750	TB	R204	NONE	RB	R204	P750	TD	R204	NONE	RD
R220	R220	P1K	TB	R220	NONE	RB	R220	P1K	TD	R220	NONE	RD
R225	R225	P1K	TB	R225	NONE	RB	R225	P1K	TD	R225	NONE	RD
R360	R360	P15K	TB	R360	NONE	RB	R360	P15K	TD	R360	NONE	RD
R580	R580	P10K	TB	R580	NONE	RB	R580	P10K	TD	R580	NONE	RD
R606	R606	NONE	TB	R606	NONE	RB	R606	NONE	TD	R606	NONE	RD
R609	R609	NONE	TB	R609	NONE	RB	R609	NONE	TD	R609	NONE	RD
R632	R632	NONE	TB	R632	NONE	RB	R632	NONE	TD	R632	NONE	RD
R633	R633	NONE	TB	R633	NONE	RB	R633	NONE	TD	R633	NONE	RD
R706	R706	NONE	TB	R706	NONE	RB	R706	NONE	TD	R706	NONE	RD
R707	R707	NONE	TB	R707	NONE	RB	R707	NONE	TD	R707	NONE	RD
R708	R708	NONE	TB	R708	NONE	RB	R708	NONE	TD	R708	NONE	RD
Z101	Z101	NONE	TB	Z101	NONE	RB	Z101	NONE	TD	Z101	NONE	RD
Z102	Z102	OFWJ1951M	TB	Z102	OFWJ1951M	RB	Z102	OFWG1962M	TD	Z102	OFWG1962M	RD
Z103	Z103	NONE	TB	Z103	NONE	RB	Z103	FILTCF1031	TD	Z103	FILTCF1031	RD
Z104	Z104	SFE6.0MB	TB	Z104	SFE6.0MB	RB	Z104	NONE	TD	Z104	NONE	RD
Z105	Z105	TCF1012	TB	Z105	TCF1012	RB	Z105	TCF1011	TD	Z105	TCF1011	RD
Z106	Z106	NONE	TB	Z106	NONE	RB	Z106	NONE	TD	Z106	NONE	RD
			TB			RB			TD			RD
			TB			RB			TD			RD
			TB			RB			TD			RD
			TB			RB			TD			RD
			TB			RB			TD			RD
			TB			RB			TD			RD

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